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DESIRABLE EQUIPMENT RELATED TO AVAILABLE SPACE
IN TYPICAL FIRST GRADE CLASSROOMS
IN NORTH CAROLINA SCHOOLS

by

FRANCES EVELYN WOOLLEN

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Franklin H. McNeill
Adviser

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CHAPTER I

INTRODUCTION

Importance of the Physical Environment

The physical equipment of the classroom is very important in the education of the child. Lack of the proper equipment may result in a drab, uninteresting room which discourages curiosity and activity on the part of the pupil and arouses feelings of dislike, fright, and homesickness or of boredom and disgust. On the other hand, the classroom may be so equipped as to make it an attractive, stimulating, home-like place which will appeal to the interests of the child, encourage him to find answers to his own questions, and to plan and complete many projects which seem important to him, arouse his curiosity along new lines, and enlarge his interests. The equipment may be so fitted to his size and his needs as to help him to do things for himself, to experience success in what he undertakes, to feel that the room belongs to him, and to develop a genuine love for his school and for what it represents.

The importance of the classroom environment is recognized by many writers on the subject. For instance, Engelhardt states that "Extensive research has indicated the tremendous impact which environment has on young children.¹" He discusses the "influence upon tastes, attitudes, and appreciations of equipment planned to make the classroom a livable place" and adds that "the schoolroom itself is part of the

1. N. L. Engelhardt, Jr., "Trends in Schoolhousing Design," American School Board Journal, 104:27, January, 1942.

curriculum . . . the school is . . . a place for another experience²
in social living for both child and teacher."

Similarly, the April, 1949, issue of The American School Board Journal reports on a book prepared by an expert Committee of the American Association of School Administrators, headed by Superintendent Warren T. White of Dallas, Texas, which declares:

. . . The expanded knowledge of individual differences and the growth in the knowledge of how children learn and under what conditions and in what sorts of environments children learn best, have led to a greatly changed classroom. No longer is it good educational practice to require a child in the elementary school to sit all day at one desk to work out his limited textbook assignments in immobility and silence. It has been discovered that he learns best when he works in a classroom designed as a laboratory for purposeful group planning, individual study and research, discussion and class evaluation.³

In like manner Paul A. Witty remarks on the importance of the physical features of a room for the mental health of those who live in it.⁴ Glenn T. Wilson, Superintendent of Schools at Greeley, Ohio, in making a similar point and in discussing recommendations adopted by the National Conference for the Improvement of Teaching at Oxford, Ohio, July 5, 1947, states:

Although the committee recognized the primary importance of the teacher in the educational process, nevertheless it is imperative that the community provide her with the proper physical surroundings and equipment to obtain maximum efficiency, Poor

2. N. L. Engelhardt, "Equipping the School of Today," School Executive, 57:293-294, March, 1938.

3. "The Best Thinking of the Educational Profession on American School Buildings," American School Board Journal, 118:80, April, 1949.

4. Paul Andrew Witty, "Atmosphere for Wholesome Growth," National Education Association Journal, 30:236-7, November, 1941.

teaching conditions not only actually hamper the teaching process but fail to provide the proper psychological setting. There is something definitely buoyant to both teacher and pupil in a clean, acoustically treated, properly lighted, artistically painted classroom with furniture of suitable size and design.⁵

Warren S. Holmes, an architect in Lansing, Michigan, speaks conservatively when he makes the following statement: "That schools are no better than their physical equipment of buildings and furnishings" is a fact too well established to be longer ignored.⁶

Need for the Study

Teachers attending summer school classes at Woman's College of the University of North Carolina in 1944 frequently mentioned inadequate buildings, furnishings, and equipment in their local schools as a hindrance to the best teaching and learning. The same feeling of need for a more satisfactory physical environment has been expressed many times when teachers have come together to discuss means of improving instruction in their schools.

Indeed, the bare and unattractive appearance of classrooms in many parts of the state would convince the visitor that they were inadequate for a rich and well-rounded educational program. For instance, space and equipment are lacking for storage, for active living, and for display of creative work. There is not enough provision for widening the child's interests and developing real learning situations.

5. Glenn T. Wilson, "School Building and Equipment to Serve Modern Educational Needs," American School Board Journal, 115: 40, August, 1947.

6. Warren S. Holmes, "Economy, True and False, In School Buildings," American School Board Journal, 103: 39, July, 1941.

The North Carolina State Education Commission, comprised of leaders in business, labor, agriculture, and education, found many classrooms to be overcrowded, inadequate, and in poor condition. They stated that

. . . the older school buildings of the state in general fail to meet the needs of a modern school program. They were planned for a different program or, in some instances, the original planning was not done in relationship to a school program.⁷

New buildings or at least new classrooms with special attention to adequate space and suitable equipment are the ideal answer to the needs which have been discussed. However, many present first grade classrooms will have to be used, even though they are inadequate in size. Remodeling and re-equipping these classrooms may bring them much nearer the requirements of the modern educational program. Many improvements may also be gradually brought about through the combined efforts of the teacher, children, and parents, if each of these groups is well-informed on equipment which will be desirable.

Statement of the Problem

The purpose of this study is to suggest desirable equipment related to available space in typical first grade classrooms in North Carolina Schools.

In developing this topic the attempt has been made to answer the following specific questions:

7. N. C. State Education Commission, Education in North Carolina Today and Tomorrow, Raleigh, North Carolina: The United Forces for Education, December, 1948, p. 341.

- I. What space is available?
- II. What equipment is desirable?
- III. How may the problem of space and equipment be resolved?

Scope of the Problem

This study will be limited to:

- I. The typical first grade classroom.
- II. The state of North Carolina

Method

In a survey undertaken to discover what space is available,
 8
 questionnaires were sent to all county and city superintendents in
 9
 North Carolina to determine the average size of first grade rooms and
 the average first grade enrollment in each county and city. One
 hundred county and seventy-one city superintendents were contacted.
 The various sections of the state were well represented in the replies
 to the questionnaire. The lowest percentage of replies, the North
 western District (33%) and the Northeastern District (48%), were
 balanced by the high percentage from the North Central District (88%).
 The distribution of the replies is shown in Table I.

8. See Appendix.

9. Educational Directory of North Carolina, 1946-1947,
 Publication No. 263, issued by the State Superintendent of Public
 Instruction, Raleigh, North Carolina.

TABLE I

Distribution of Replies to the Questionnaire

Counties	Percentages
Western District	61%
Northwestern District	33%
North Central District	88%
Northeastern District	48%
Southeastern District	62%
South Piedmont District	60%
<hr/>	
Total Counties	59%
Total Cities	76%

Table II shows details of the average size of room.

TABLE II

Average Size of Room Reported

Counties	Average Size of Room		
	Length in Feet	Width in Feet	Height in Feet
Western District	30	21	11
Northwestern District	31	21	12
North Central District	32	22	12
Northeastern District	32	22	12
Southeastern District	31½	22	12
South Piedmont District	32	21	11
Cities	31	21	12
<hr/>			
Average for State as a Whole	31½	21½	12

Table III shows details of the average enrollment reported in the replies to the questionnaires.

TABLE III

Average Enrollment Reported

Counties	
Western District	36
Northwestern District	38
North Central District	36
Northeastern District	32
Southeastern District	38
South Piedmont District	36
Cities	34
<hr/>	
Average for State as a Whole	35

On the basis of this survey a rectangular room thirty-one and one half feet long, twenty-one and one fourth feet wide, and twelve feet high was found to be the average for the state. This type room, which usually serves an enrollment of thirty-five children, is typical of first grade rooms in the state but is too small to contain the "900 to 1000 square feet of floor space" which the North Carolina State Education Commission says is required for the modern primary classroom. Careful selection and arrangement of equipment, therefore, will be necessary to improve the physical environment as much as possible. Suggestions for desirable equipment and its arrangement in such a room will be presented in chapter three.

The following steps were taken to discover what equipment is desirable:

1. Equipment was selected on the basis of its desirability for the particular program planned. Hence, the purpose of a good school was first determined. A statement of the educational aim and of its expression in the first grade program will be described in chapter two.
2. Equipment in outstanding schools was observed.
3. Successful educators and experts on building and equipment were interviewed.
4. The literature was studied.

The following schools were visited: first, Curry Training School at Woman's College of the University of North Carolina, Greensboro, North Carolina, second, Park Street School in Asheboro, North Carolina, third, the new school building at Fuquay in Wake County, and fourth, another new building at Buie's Creek in Harnett County.

Much helpful information was secured from interviews with the Director of the North Carolina Division of Schoolhouse Planning, a number of instructors at Woman's College of the University of North Carolina, the principal and the first grade teacher of Curry School, and others with successful teaching experience in first grade, kindergarten, or nursery schools. A school carpenter of Harnett County
11
Schools was also very helpful.

11. See Appendix.

Literature on school buildings and equipment was examined with special attention to the parts of this literature which appeared between January, 1938, and June, 1949, and which related to primary classrooms. Issues of the Education Index covering this period of time were used to discover material. Catalogues were secured from a number of equipment companies.

Survey of the Literature

A search for related theses was made through the following books and periodicals:

Palfrey, Thomas R., and Coleman, Henry E., Jr. Guide to Bibliographies of Theses. United States and Canada, Second edition. Chicago, American Library Association, 1940. 54 pp.

United States, Library of Congress. Catalogue Division. A List of American Doctoral Dissertations. Washington, D. C.: Government Printing Office, 1913-39. 27 v.

Trotter, Arnold H., editor. Doctoral Dissertations Accepted by American Universities. New York: The H. W. Wilson Company, 1933-34-1947.

Monroe, Walter Scott. Ten Years of Educational Research, 1918-1927. University of Illinois Bulletin XXV (August 21, 1928), no. 51. Urbana: University of Illinois, 1928. (Bureau of Educational Research, College of Education, Bulletin No. 42). 367 pp.

United States, Office of Education Library. Bibliography of Research Studies in Education, Washington, D. C.: Government Printing Office, 1929-1947.

Good, Carter Victor, editor. "Doctors' Theses Under Way in Education." 1930-1931. Journal of Educational Research, 1931-1949. (1948-1949).

12. Dorothy Ross Carpenter and Margaret Furlong, editors, The Education Index, for January, 1938 - June, 1949. New York: The H. W. Wilson Company, 1938-1949.

13. See Appendix.

Gray, Ruth A., editor. Doctors' Theses In Education: a List of 797 Theses Deposited With the Office of Education and Available for Loan. United States Office of Education, Pamphlet, No. 60. Washington, D. C.: Government Printing Office, 1935. 69 pp.

Barstad, Anvor, editor. Register of Doctoral Dissertations Accepted in Partial Fulfillment of the Requirements for Degree of Doctor of Philosophy. Vol. I, 1899-1936. Teachers College Bulletin, 28th Series, No. 4, February, 1937. New York: Teachers College, Columbia University, 1937. 136 pp.

New York University. Washington Square Library. List of Doctors' and Masters' Theses in Education. New York University, 1890-June, 1936. New York: The University, School of Education, 1937. 117 pp.

Northwestern University. List of Doctoral Dissertations, 1896-1934. Chicago-Evanston, Illinois: The University, 1935. 27 p.

A number of theses were found which discussed some phase of equipment, but none of these suggested means of relating desirable equipment to a limited space.

CHAPTER II

THE EDUCATIONAL AIM AND PROGRAM IN THE FIRST GRADE

In order to select desirable equipment for a first grade classroom it will be necessary to know what is the educational aim or purpose of the school in which it is located and how this aim effects the first grade program. Consequently, the next step in this study is to state the educational aim or purpose.

The Educational Aim

The purpose of a good school is to secure the wholesome growth of the whole child. Health and physical development, mental growth, emotional adjustment, and social development are all important in his education.

One of the first considerations of the school program is the discovery of physical defects and correction of as many of these as possible. At the same time, through daily practice of healthful living at school, the child should satisfy his needs for food, sleep or rest, and exercise in fresh air and sunshine. He should develop attitudes and habits which result in cleanliness and good posture, in a strong, healthy body and in skill in the use of that body. Gradually he should add to his knowledge of what to do at school and at home to keep healthy. He should grow steadily in habits of independence so that he can take care of his own needs: get his tools or equipment, wash and dress himself, put on his outdoor clothing, and keep his property in order.

The child should also grow in the ability to think clearly and

¹
pragmatically, and to solve practically simple problems on his level of maturity, for, as Barnes declares:

the world of the future will need, as never before, men and women who can think independently, reach convictions promptly, and act effectively.²

The child should also begin to use numbers, reading, writing and other such tools of learning, and to gain command of the skills involved. He should develop appreciations which lead him to seek further experiences in music, poetry, and art.³ He should begin to gain concepts concerning the natural world around him but also should retain a desire to learn more about that world.

A feeling of security and a sense of belonging should be developed in each child⁴ and each one should feel the warm affection of those around him.⁵ At the same time each one should begin to face reality, learning to take small successes or failures in his stride, to accept his strengths and weaknesses, and to ~~set~~⁶ goals that he can reach.

1. From a class lecture by Dr. Franklin H. McNutt, Associate Dean of the Graduate School, Woman's College of the University of North Carolina, Greensboro, North Carolina, July 9, 1946.

2. G. Barnes, "Education for 1950," American Association of University Professors Bulletin, 29:228, April, 1943.

3. Interview with Dr. Eugenia Hunter, Associate Professor of Education, Woman's College of the University of North Carolina, Greensboro, North Carolina, June 20, 1948.

4. From a class lecture by Miss Ruth Fitzgerald, Professor of Education, Woman's College of the University of North Carolina, Greensboro, North Carolina, June 13, 1944.

5. National Committee for Mental Hygiene (Canada), "Chart of Child Needs." Leaflet Number 8, Association for Childhood Education, Portfolio for Nursery School Teachers. Washington, D. C.: The Association [n. d.] . p. 2.

6. From a class lecture by Miss Ruth Fitzgerald, June 13, 1944.

Each child should form habits of diligence and perseverance.⁷ Each one should begin to find things that are deeply true for him -- things which have abiding value.

In the social area the child should begin to develop traits which make him a good citizen. He should give evidence of a beginning of respect for others, fairness, courtesy, cooperation, generosity,⁸ the inclination and ability to accept responsibilities for the group. He should begin to show independence and to accept responsibility for himself, begin to give evidence of integrity, honesty, respect for property, dependability, truthfulness, promptness, and courage sufficient to meet his needs. He should begin to develop concepts concerning democracy, the beginnings of a conception of the responsibility of all for sharing work that needs to be done, of the obligation of the fortunate⁹ or the able toward the less fortunate, the beginnings of recognition of service as a privilege and an obligation, and the beginnings of the ability to pool ideas in order to come to satisfactory solutions to¹⁰ group problems.

Guidance of the Total Living Process in the First Grade

Next the teacher's guidance of the total living process in the first grade must be described. In order that the child shall develop along the lines traced above, the superior first grade teacher will do

-
7. Interview with Dr. Eugenia Hunter, June 20, 1948.
 8. From a class lecture by Dr. Eugenia Hunter, June 10, 1946.
 9. From a class lecture by Dr. Franklin H. McNutt, July 10, 1946.
 10. Interview with Dr. Eugenia Hunter, June 10, 1948.

certain things in the course of her guidance of this development, for as Kilpatrick says, "We learn what we live and in the degree that we live it."¹¹

The superior first grade teacher will provide for meaningful experiences along the line of health, the child's daily living, and outstanding interests. The teacher and child together will select experiences which seem likely to be most meaningful and will plan how to solve their problems. The teacher will help the child to find information necessary to fill his needs and to use the information in a satisfactory way, help him to learn the use of symbols and the skills he needs for his activities, and to evaluate his successes and learn from his failures.

She will give the child opportunity for ample bodily activity, both indoor and outdoor: play, dramatization, construction, rhythmic activity, gardening, and trips. She will provide for stimulation of the child's interests in science, reading, housekeeping play, music, art, carpentry, oral and written language, and number concepts.

She will see that the child has food when he needs it: possibly breakfast for those who have missed it, mid-morning lunch of fruit or milk, and a mid-day lunch. She will provide for the child's rest or sleep when he needs these. She will also provide situations where the child may form habits of cleanliness and neatness: washing his hands before eating, caring for wraps, and keeping his belongings in order. She will provide for other health habits: toileting, obeying safety rules, covering his mouth when coughing or sneezing, keeping objects out

11. William H. Kilpatrick, "Case for Progressivism in Education." National Education Association Journal, 30: 231, November, 1941.

of his mouth, nose, ears and eyes, and drinking plenty of water. In addition, she will do all she can to provide for health examinations of each child and will try to secure correction of defects.

As the Educational Policies Commission suggests, a "good elementary school . . . emphasizes social responsibility and the co-operative skills . . ."¹² The superior first grade teacher then will lead the children to cooperate in the care of the schoolroom, helping each child to accept small responsibilities which are within his ability to perform successfully. She will provide opportunities for creative experiences in art, music, and language, and for enjoyment of art, music, poetry, and literature. She will also provide for parents activities in connection with the school.

Kilpatrick states that "respect for the human personality as such is accepted as the chief foundation stone for the new education."¹³ The superior first grade teacher will, therefore, see each of her pupils as an individual, and seek to lead each one on the basis of her respect for his growing personality and her insight into his individual needs, interests, and aptitudes.

Desirable equipment will be that which does most to make possible and encourage such a program. Equipment will be chosen for its usefulness in stimulating the child to engage in meaningful activities,

12. Educational Policies Commission, Education for All American Children. Washington, D. C.: The Commission, 1948. p. 4.

13. William H. Kilpatrick, "Philosophy of the New Education," School and Society, 54: 481, November 29, 1941.

to think clearly and pragmatically, to practice good health habits, to cooperate with his fellows and to accept the responsibilities of group life, and to express himself creatively.

Summary

The educational aim of a good school is to secure the wholesome growth of the whole child by the development of

1. Attitudes, habits, and knowledge which result in a strong healthy body and skill and independence in the use of that body.
2. Ability to think effectively about practical problems on his level of maturity; habits of observing keenly the world around him; and habits of enjoying experiences with art, music, poetry, and other literature.
3. Sound mental health and good work habits.
4. The social concepts, attitudes, and traits of a good citizen who has respect for others, independence, integrity, and the inclination and ability to cooperate with his fellows and to accept the responsibilities of group life.

The superior first grade teacher will provide for the child to have

1. Meaningful experiences related to health, his daily living, and his outstanding interests.
2. Opportunities to meet and solve problems at his level of maturity, using the information and skills he needs for the purpose, and then evaluating the results.
3. Ample bodily activity and practice in good health habits.
4. Experience in working with a group and accepting small responsibilities within his ability to perform successfully.

5. Opportunities for creative experiences in art, music, and language and for enjoyment of art, music, and poetry and other literature.

The superior teacher will see each child as an individual and lead each one on the basis of her respect for his growing personality and her insight into his individual needs.

Equipment is desirable to the extent that it encourages a program of this type.

CHAPTER III

SUGGESTIONS FOR DESIRABLE EQUIPMENT AND ITS ARRANGEMENT

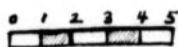
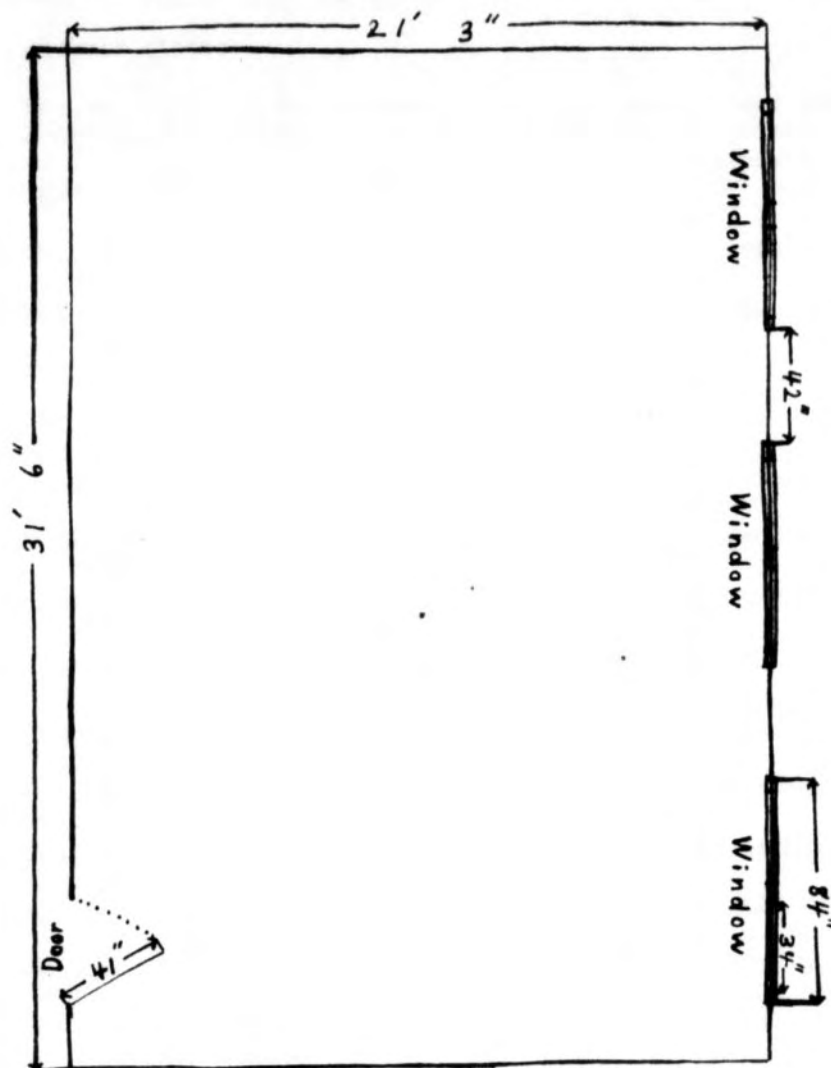
The Typical Room

The typical first grade room in North Carolina schools, as described in this study, is rectangular in shape and averages a length of thirty-one and one half feet, a width of twenty-one and a fourth feet, and a ceiling height of twelve feet. See Plate I. Enrollment for first grades in the state averages about thirty-five children to a room. Investigation of the literature on school buildings indicates agreement that space is one of the first requirements of a school program which will foster the wholesome growth of the child. For example, Engelhardt calls attention to the need for "adequate space for work areas as well as for quiet reading."¹ He suggests that "space is needed for art, drama, music, dance, literature, and for exploratory work in the fields of industrial and home arts."² Holy also mentions "space for class projects."³ Credle lists space together with "light, air, water and sunshine as essential to growth and bodily comfort,"

1. N. L. Engelhardt, "Elementary Classroom Planning As Seen by a City Superintendent," Childhood Education, 22: 291, February, 1946.

2. N. L. Engelhardt, Jr. "Elementary Public School Design," Architectural Record, 85: 88, February, 1939.

3. Thomas C. Holy, "Building Types: The Neighborhood School Reference Studies On Design and Planning," Architectural Record, 88:89, October, 1940.



Scale in Feet

PLATE 1
A TYPICAL ROOM
SHOWN WITHOUT EQUIPMENT

and recommends "twenty-five square feet per child"⁴ in primary classrooms. Nichols states:

We need not just the sixteen or eighteen square feet per pupil necessary for sitting, but the twenty-five or thirty square feet required for active learning and the equipment that goes with it.⁵

Thirty square feet for each child in an average enrollment of thirty-five would, of course, require 1,050 square feet. Twenty-five square feet for each child would call for 875 square feet. However, the typical first grade room in the state supplies 712 square feet. These things being true, the question arises: What can be done with such rooms to secure the most satisfactory school-homes possible for the first grade children, teachers, and parents who will use them?

Seating

In an earlier day most of the floor space in a school room was filled with desks or tables and chairs. The child studied an assignment in a book or worked it out on paper, spending a large part of the school day in his seat. A better understanding of child nature⁶ and of how "children learn through experiencing and doing" leads to a much more active and varied program. To quote from a discussion of a book prepared by a Committee of the American Association of School Administrators, headed by Superintendent Warren T. White of Dallas:

4. W. F. Credle, "Planning the Primary Classroom," Childhood Education, 22:301-302, February, 1946.

5. John E. Nichols, "Planning Small Town and Rural Schools," Childhood Education, 22:299, February, 1946.

6. Ethel Stryker, "Flexibility. School Housing Needs for Young Children, Bulletin, Washington, D. C.: The Association for Childhood Education, 1939. p. 8.

The expanded knowledge of individual differences and the growth in the knowledge of how children learn and under what conditions and in what sorts of environments children learn best, have led to a greatly changed classroom . . . In fact, the trend is distinctly toward the classroom as a learning and growing laboratory for children.⁷

A program of this kind demands a variety of materials and equipment. N. L. Engelhardt points out that the classroom is becoming "that kind of workshop or laboratory in which . . . many other learning media supplement the textbook in the teaching and learning process.⁸ All these materials and this equipment require space for use and for storage. In the effort to equip a typical first grade room in North Carolina for the best learning and development of the children who will use the room, a major problem is to seat the children without filling space which is too greatly needed for other purposes. Since there is such a premium on room space, "furniture . . . should be capable of serving more than one purpose," as Beatty proposes. For example, chairs not attached to tables are more desirable than desks because such chairs may be used "for reading and discussion circles, and audience situations."⁹

Chairs

The first consideration in selecting a chair is the comfort and health of the child who is to sit in it. As Vineyard suggests,

7. "The Best Thinking of the Educational Profession on American School Buildings," American School Board Journal, 118:80, April, 1949.

8. N. L. Engelhardt, "New Schools After the War," Architectural Record, 93:71, February, 1943.

9. Willard W. Beatty, "The Schoolroom and Its Equipment," American School and University. Tenth Annual Edition, New York: American School Publishing Corporation, 1938. p. 328.

the "effect of seats on posture and eyes of students who will use the¹⁰ seats" is important. Several different sizes are, of course, needed to fit the various children in any first grade group. One study recommends at least six sizes and declares that the "shape and slope of seat and, of back . . . should conform to the contour of a normally¹¹ formed body." Hebelers approves "saddle seats cut well back in the chairs and a single well-shaped supporting rail across the top of the chair backs."¹² Other desirable characteristics are simple design and sturdy construction, rounded edges and corners, and the absence of indentations that allow dust to accumulate. The chair should be "light in weight and color, easily cleaned and readily moved. (It may be,¹³ made of wood or a plastic material." One light, attractive chair type is "fabricated from stainless steel tubing with padded seats and backs covered with very colorful plastic material."¹⁴

As important as are posture and eyesight, these are not the only things to consider.

10. Jerry J. Vineyard, "New Score Card for Schoolroom Seating," American School Board Journal. 108:29, March, 1944.

11. F. I. Gary and others, "Check-list for School Desks and Chairs," School Executive, 63-49, October, 1943.

12. Amanda Hebelers, "New Schools for Old," Childhood Education, 16: 270, February, 1940.

13. R. Gommel Roessner, "Planning the Classroom for the Elementary School," American School Board Journal, 118: 37-38, March, 1949.

14. J. Chester Swanson and Fred W. Hosler, "A Classroom for Primary Schools," American School Board Journal, 116: 57, January, 1948.

The modern classroom must have a warm and homey feeling for the student, Truman E. Phillips contends. Children think then of their classroom as they do of their home and thus are more relaxed, learn easier, and tire less quickly.¹⁵

Much of the literature on school building stresses this need.

Engelhardt declares a school should be "intimately attractive and not overpowering to small children,¹⁶ and Nichols states that schools "will increasingly be . . . designed in as inviting and homelike character as possible."¹⁷

Supplementary Seating

Supplementary seats such as a divan, a window seat, or an easy chair add to the homelike appearance of the room. Lewis suggests the addition of "a rocker or two painted and upholstered in gay cretonne."¹⁸ Moreover, seating must be provided for the teacher and for adult visitors. Therefore, Van Ness includes two visitors' chairs and a teacher's chair in his list of room furniture.¹⁹ As parents will come at times in larger groups than two, it will also be well to have a few

15. Arthur W. Priaulx, "Want Good School Plant? - Then Design a Perfect Classroom," American School Board Journal, 118:46, May, 1944.

16. N. L. Engelhardt, Jr., "Trends in Schoolhousing Design," American School Board Journal, 104:28, January, 1942.

17. John E. Nichols and I. O. Friswold, "On Planning the Post-war School," Architectural Record, 93:66, March, 1943.

18. E. E. Lewis, "Equipping the Classroom As a Learning and Teaching Laboratory," American School Board Journal, 101:30, December, 1940.

19. H. J. Van Ness, "Boone Builds Modern School Buildings," American School Board Journal, 102:35, April, 1941.

folding chairs for their use if storage space can be arranged.

The seating equipment may include mats to accommodate groups
²⁰
 of children sitting on the floor. A large straw mat can be easily
 unrolled for use, dirt can be shaken from it, or the vacuum cleaner
²¹
 used to clean it thoroughly. The children may bring bath mats from
 home and carry them back for washing when they become soiled, or they
²²
 may sit on Rubatex or other rubber mats. The structure of Rubatex
 makes it soft and resilient, light in weight, easily cleaned, durable,
²³
 and a good "insulating . . . material."

Tables

Tables serve the children as a place on which to draw, paint,
 write, eat, play games, or carry on any other activity which requires
 such working space. Roessner suggests selection of a table, "light in
²⁴
 weight and color, easily cleaned and readily moved." Beatty adds that
 they should be of simple design, but of sturdy construction, and with
 "corners . . . slightly rounded." He also declares: "If any other

20. Interview with Dr. Franklin H. McNutt, Associate Dean of
 the Graduate School, Woman's College of the University of North Carolina,
 Greensboro, North Carolina. June 23, 1948.

21. Mrs. M. Orr-Rosa, "Decorative Trends," Nation's Schools.
 27:34, June, 1941.

22. Interview with Miss Eleanor Kincanon, second grade teacher,
 Erwin, North Carolina. October 18, 1948.

23. Rubatex: Closed Cellular Rubber. New York 17, N. Y.: Great
 American Industries, Inc., n. d., pp. 2-3.

24. Roessner, op. cit., p. 37.

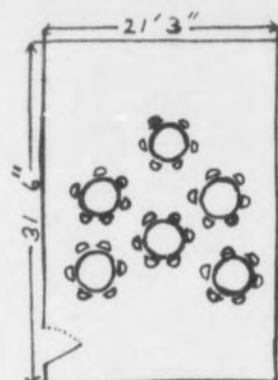
means can be found for storing the child's individual equipment, the table is best without a book storage box.²⁵ These tables should be fitted with gliders so that they will move easily. Round tables are attractive and give children more arm room. They take very little more space than rectangular ones but cannot be pushed together and used as one long or wide table. See Plate 2.

Finally, several heights of tables will be needed to fit each child in any first grade group. Individual tables are lighter and more easily moved and give more flexibility in arrangement. However, they also fill more space. See Plate 2. When the individual tables or the larger round or rectangular tables are not in use, they can be pushed together or against the wall to leave space for other activities. See Plate 3.

However, still more space than any of these tables allow will be needed for games, rhythmical activity, building with blocks, and other work and play.²⁶ Investigation of nested tables or those which can be fitted one under the other led to the conclusion that such tables would make possible a greater variety of different heights and sizes. Moreover, when the tables are not in use the nesting method will allow more space for activities than can be arranged when other types of tables are used. The tables could be made of wood, reinforced at the corners with metal braces, (See Plate 4.) or they might be constructed of some kind of plastic or metal tubing. See Plate 4. Swanson and

25. Beatty, *op. cit.*, p. 327.

26. Interview with Dr. Franklin H. McNutt, June 23, 1948.

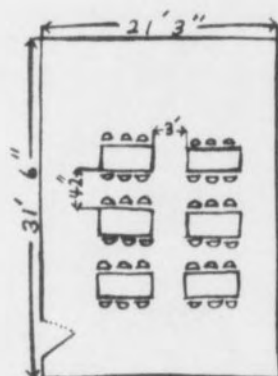


Round Tables

Key

Width of Tables - 42"

Distance between Tables - 40"

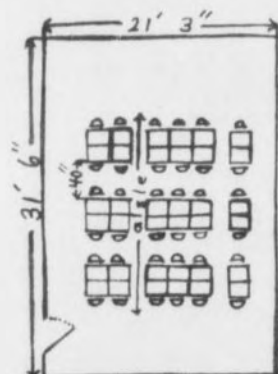


Rectangular Tables

Key

Width of Tables - 30"

Length of Tables - 60"



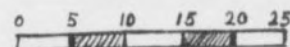
Individual Tables

Key

Width of Tables - 18"

Length of Tables - 24"

Width of Aisle between Tables - 18"

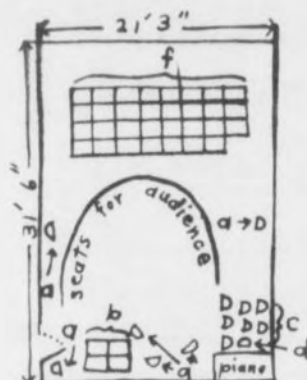


Scale in Feet

PLATE 2

TABLES GROUPED

TO ALLOW FOR ADDITIONAL SPACE



Dramatization

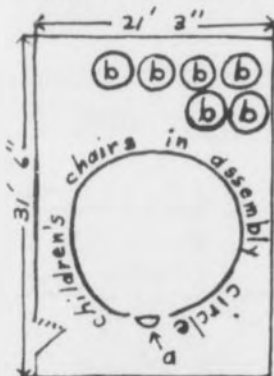
Key

- a - Seats for Players (Actors)
- b - Tables Used in Dramatization
- c - Seats for Orchestra
- d - Teacher's Chair at Piano
- e - Tables Not in Use

Reading Circle
and
Quiet Activities

Key

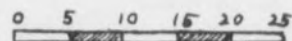
- a - Child Observing Turtle
- b - Child Rearranging Shells
- c - Children Standing to Paint Frieze
- d - Children Playing Number Games
- e - Children Using Clay
- f - Extra Chairs



Assembly

Key

- a - Teacher's Chair
- b - Tables Not in Use



Scale in Feet

PLATE 3
TABLES AND CHAIRS
ARRANGED FOR GROUP WORK

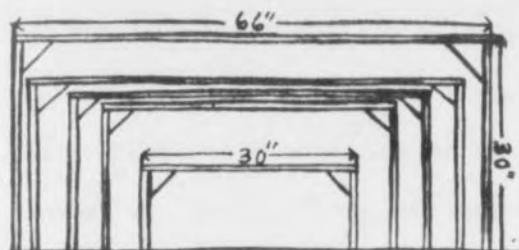


TABLE SHOWING SIZE			
Length	Width	Height	Used by
66"	30"	30"	Teacher or Parents and Standing Children
60"	30"	24"	8 Children
50"	30"	22½"	8 Children
40"	30"	21"	6 Children
30"	30"	12"	1 or 2 Children Sitting on Floor

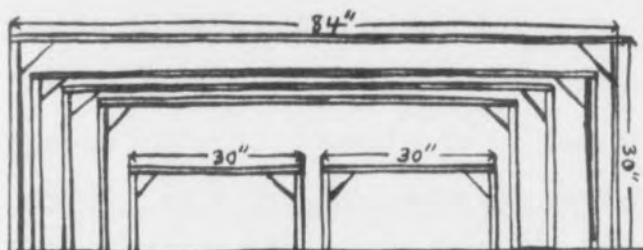


TABLE SHOWING SIZE			
Length	Width	Height	Used by
84"	30"	30"	Teacher or Parents and Standing Children
78"	30"	25"	6 Children
68"	30"	23½"	6 Children
58"	30"	22"	4 Children
Two Tables			
24"	30"	12"	1 or 2 Children Sitting on Floor

Wooden Tables

Two Nests of Wooden Tables
Required for 35 Children

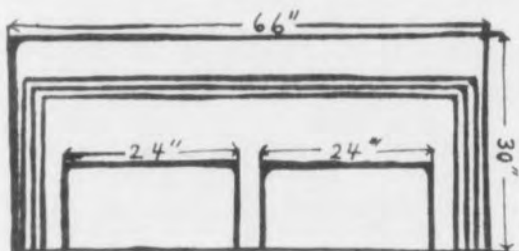


TABLE SHOWING SIZE			
Length	Width	Height	Used by
66"	30"	30"	Teacher or Parents and Standing Children
63"	30"	24"	6 Children
60"	30"	23"	6 Children
57"	30"	22"	6 Children
Two Tables			
24"	30"	12"	1 or 2 Children Sitting on Floor

Plastic or Metal Tables

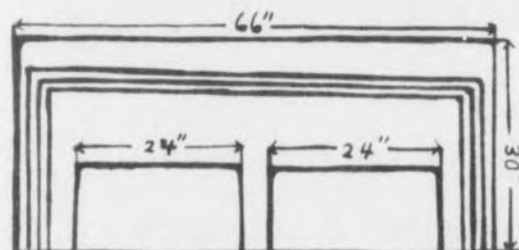


TABLE SHOWING SIZE			
Length	Width	Height	Used by
66"	30"	30"	Teacher or Parents and Standing Children
63"	30"	24½"	6 Children
60"	30"	23½"	6 Children
57"	30"	22½"	6 Children
Two Tables			
24"	30"	12"	1 or 2 Children Sitting on Floor

Plastic or Metal Tables

Two Nests of
Plastic or Metal Tables
Required for 35 Children

PLATE 4

NESTS OF TABLES

Hosler describe tables of "stainless steel tubing bent to form legs with
 tops of . . . bleached maple finished in its natural light tan color."²⁷

These plastic and metal tables have the advantage of being lighter in weight and more easily moved than those made of wood.

Nested tables similar to these are pictured in a portfolio sent out by the makers of Armstrong's Linoleum "in collaboration with representatives of the National Education Association."²⁸ See Plate 5. These writers call attention to the fact that the tables and chairs vary in size to give all pupils proper seating height. Two groups of nested tables will be required to furnish correct heights for the average range of sizes found among six and seven-year-old children, and to seat thirty-five children. Low tables, twelve inches high, for those who like to sit on the floor may be made to push under each group, and tables thirty inches high supply a good working or display space for standing children or for parents and the teacher. If the child needs a table, he can easily pull out one of the size and height he wishes to use. When these tables are nested and pushed together or against the wall, the maximum space possible will be left for large group, or for a variety of smaller group activities. See Plate 6.

Balcony

Any group of six and seven-year-old children will be inclined to agree with N. L. Engelhardt that "balconies might add much to the

27. Swanson and Hosler, op. cit., p. 57.

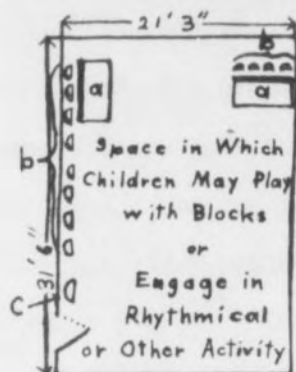
28. Ideas for an Up-to-date Schoolroom. Lancaster, Pennsylvania: The Armstrong Cork Company, Floor Division, [n. d.] pp. 1-3.



★

*Picture from Ideas for an Up-to-date Schoolroom,
by Armstrong Cork Company In collaboration with
representatives of the National Education Association.

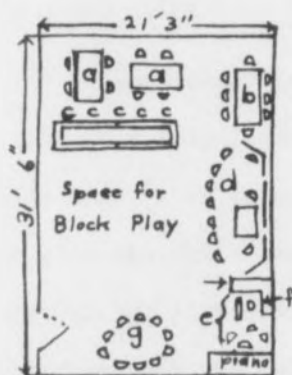
PLATE 5
NESTED TABLES AND CHAIRS



Room Arranged for
Block Play or Games

Key

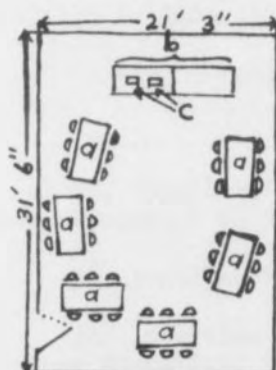
- a - Nested Tables
- b - Nested Chairs
- c - Teacher's Chair



Room Arranged for
Group Work

Key

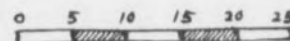
- a - Clay Table
- b - Library
- c - Children Painting Frieze
- d - Dramatization: Stage and Audience
- e - Music Center
- f - Shelf for Musical Instruments
- g - Small Group in Conference



Room Arranged
For Lunch

Key

- a - Lunch Tables
- b - High Tables
- c - Hot Plates



Scale in Feet

PLATE 6

NESTED TABLES AND CHAIRS
GROUPED TO ALLOW FOR ADDITIONAL SPACE

lure of learning."²⁹ An eight foot wide balcony across the back of the schoolroom (See Plate 7) will add much space. Even a balcony six by seven and one half feet (See Plate 7) will be popular as a playhouse, (See Plate 7) or for dramatic play, such as riding in an airplane. It also "affords a retiring place for children who prefer occasional solitary play."³⁰ The small balcony can be formed by simply placing an open railing around the top of a wardrobe closet. It can be as low as four and a fourth feet from the floor. The large balcony may be six feet high and be supported by posts. See Plate 8.

A stationary ladder may be planned with the same degree of incline as a step ladder. It should have flat steps or treads three inches wide, like those of a step ladder. A railing along each side³¹ will give the child something to hold to as he goes up or comes down. A restraining line should be painted on the floor a short distance from the bottom step and children should be taught to form a line behind this mark so that only one will be on the steps at a time. They should also be taught to face the ladder when going up or down.³²

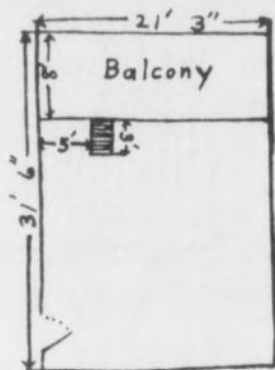
A strong railing should protect the only open side of the

29. Engelhardt, "Elementary Classroom Planning As Seen by a City Superintendent," p. 291.

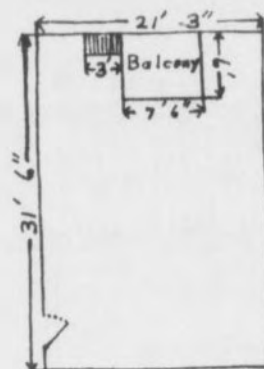
30. Engelhardt, "Elementary Public School Design," p. 94.

31. Interview with Miss Margaret Greene, Associate Professor of Physical Education, Woman's College of the University of North Carolina, Greensboro, North Carolina. July 6, 1948.

32. Interview with Miss Ethel Martus, Professor of Physical Education, Woman's College of the University of North Carolina, Greensboro, North Carolina. June 23, 1949.



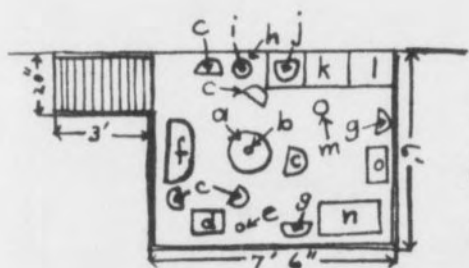
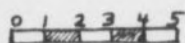
Large Balcony (21' 3" X 8')



Small Balcony (7' 6" X 6')



Scale in Feet

Detail of Small Balcony
Equipped as a Playhouse

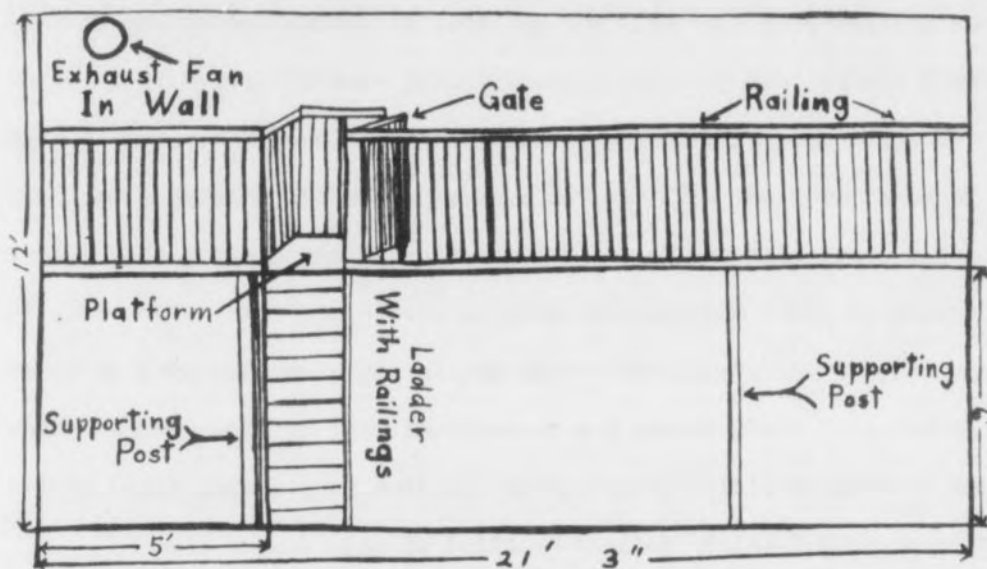
Scale in Feet

Key

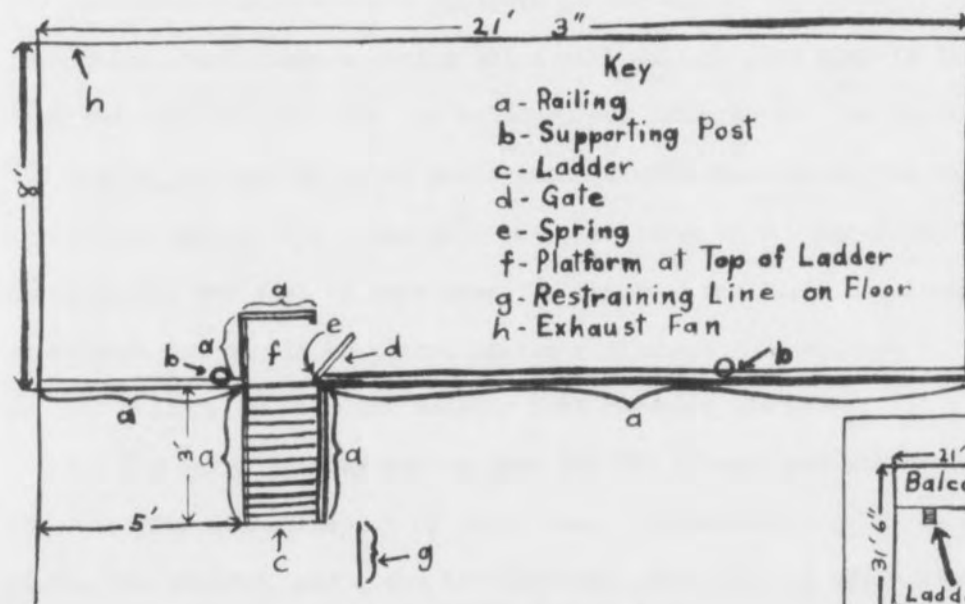
- | | |
|--------------------|---------------------|
| a - Center Table | h - Telephone Table |
| b - Table Lamp | i - Telephone |
| c - Easy Chair | j - Sink |
| d - Radio | k - Work Table |
| e - Floor Lamp | l - Stove |
| f - Divan | m - Work Stool |
| g - Straight Chair | n - Bed |
| o - Dressing Table | |

PLATE 7

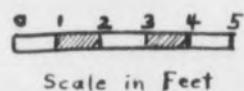
ROOMS SHOWN WITH BALCONY



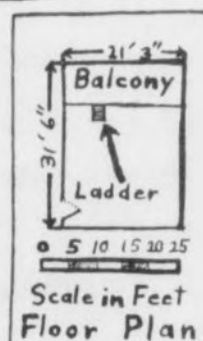
Vertical Plan



Floor Plan



Scale in Feet



0 5 10 15 20 25

Scale in Feet
Floor Plan

PLATE 8
DETAIL OF LARGE BALCONY

balcony and should extend in front of the windows. This railing should be of an open type to make possible supervision by the teacher from the main floor of the room. A strong widely spaced wire mesh might be used for a railing but would perhaps detract from the appearance of the room. Safety glass reaching from the floor of the balcony to a height of about three feet would make an ideal railing but would be expensive. Steel or iron rods or pipes placed about four inches apart, or wooden rods not more than an inch in diameter and placed about four inches apart, would make a good railing, if painted a light, attractive color.³³

A gate should also be built at the top of the ladder to protect children from falling. This gate should be placed far enough inside the balcony to leave a small platform at the top of the ladder. The gate, which should have a spring which will pull it shut when it is released, should open into the balcony, not outward onto the platform and ladder, so that no child could push it open from inside the balcony by leaning against it. This gate may also serve as a restraining line for children who wish to come down the ladder. See Plate 8. Finally, an exhaust fan should be placed in the wall above the children's heads in this balcony to keep the balcony from becoming too hot.³⁴

The large balcony may be used for the library and playhouse or for space for dramatization or block play. Cabinets along the wall opposite the windows, and along the back wall will furnish ample storage

33. Interview with Miss Mary Batts, first grade teacher at Erwin, North Carolina. April 25, 1950.

34. Interview with Miss Ethel Martus, June 23, 1949.

space for whatever purpose it is used. These cabinets may be built to the ceiling; shelves which are too high for children to reach conveniently may be used by the teacher and parents. See Plate 9.

A Platform in Front of the Windows

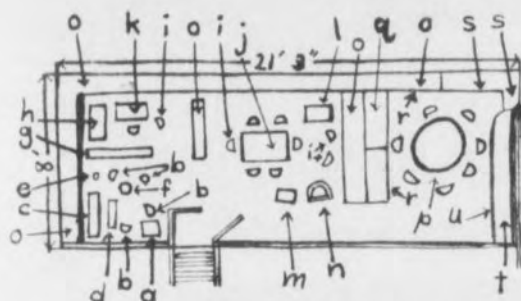
High windows (thirty-six inches from the floor in many rooms) make the schoolroom very far from home-like. A platform eighteen inches high ³⁵ (See Plates 10 and 11.) will raise the children to a place where they can easily see out of the windows, make possible a window seat, and supply another light, attractive nook for a science center, library, playhouse, work table, or stage for dramatizations. See Plates 12 and 13.

"That no window should extend below the top of the pupil desk level has been a generally accepted rule," ³⁶ but investigation of the literature indicates that the tendency is to lower the level of the window-sill. Windows in homes are built low enough for the child to see outdoors, and movable seating may make possible some relaxing of the rule concerning height of the window-sill in the school room. If desired, the platform may be used in ways which do not encourage the child to sit there for close work. If such a platform is built with ³⁷ gliders or casters, it will be movable when a change in the arrange-

35. Observed in the Home Economics Nursery at Woman's College of the University of North Carolina, Greensboro, North Carolina, June 11, 1947.

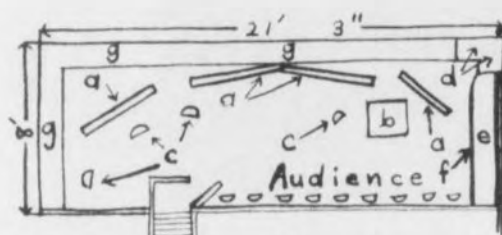
36. William O. Engle, "School Lighting," Review of Educational Research, 12:212, April, 1942.

37. "New Type Classrooms Feature Northwest Schools," American School Board Journal, 116:40, May, 1948.



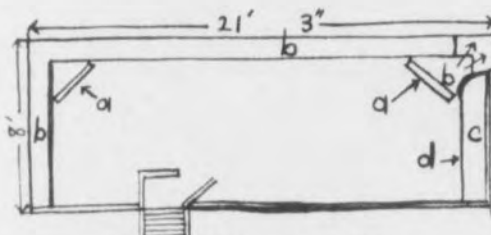
For Playhouse and Library

- Key
- | | |
|--------------------|--------------------------------|
| a - Radio | l - Stove |
| b - Easy Chair | m - Refrigerator |
| c - Piano | n - Kitchen Sink |
| d - Piano Stool | o - Cabinets |
| e - Lamp | p - Reading Table |
| f - Center Table | q - Magazine Rack |
| g - Screen | r - Tackboard on Cabinet Doors |
| h - Bed | s - Book Shelves |
| i - Straight Chair | t - Window Seat |
| j - Dining Table | u - Cabinets under Window Seat |
| k - Dressing Table | |



For Dramatization

- Key
- | | |
|--------------|--|
| a - Screen | d - Shelves for Toys |
| b - Table | e - Window Seat |
| c - Chair | f - Storage Space for Costumes under Window Seat |
| g - Cabinets | |



For Block Play

- Key
- | | |
|-------------------------------------|--|
| a - Screen | |
| b - Storage Space for Blocks | |
| c - Window Seat | |
| d - Storage Space under Window Seat | |
| e - Shelves for Toys | |

0 1 2 3 4 5
Scale in Feet

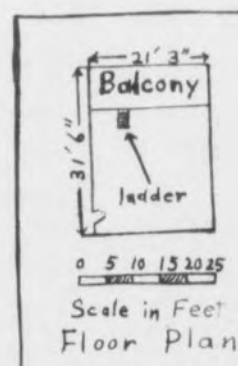


PLATE 9

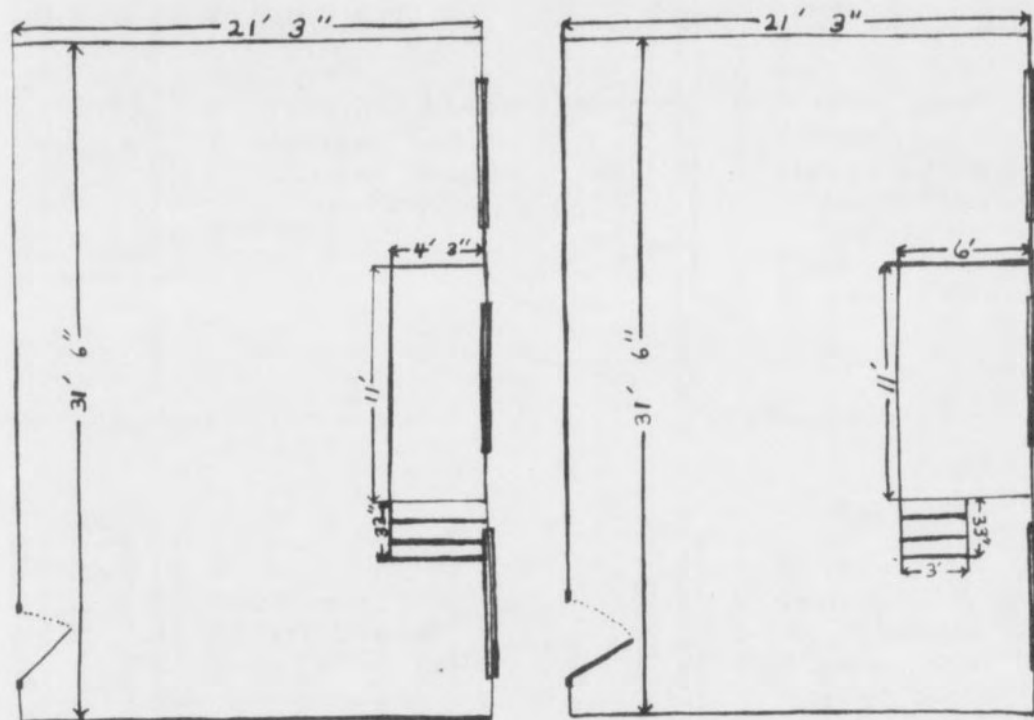
ARRANGEMENT OF EQUIPMENT IN LARGE BALCONY



(Scene in Home Economics Nursery
at Woman's College of the University of
North Carolina, Greensboro, North Carolina,
June 23, 1949.)

Platform was built to raise nursery children
to a height where they could draw and
"write" on a high writing board.

PLATE 10
A PLATFORM IN FRONT OF WRITING BOARD



Small Platform
(4' 3" X 11')

Large Platform
(6' X 11')

0 1 2 3 4 5
Scale in Feet

PLATE II
ROOM SHOWN WITH PLATFORM
IN FRONT OF WINDOWS

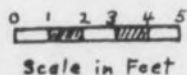
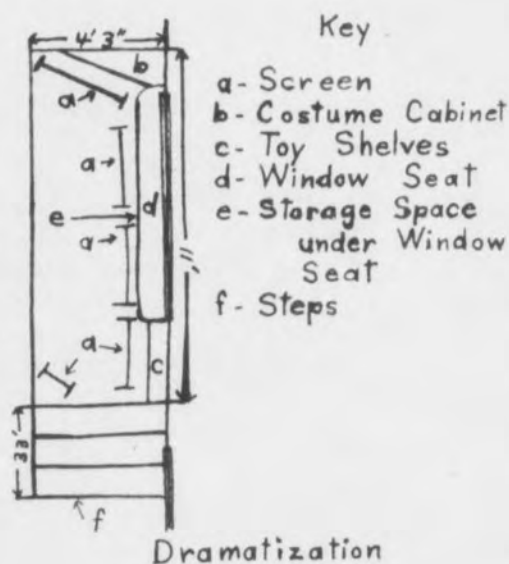
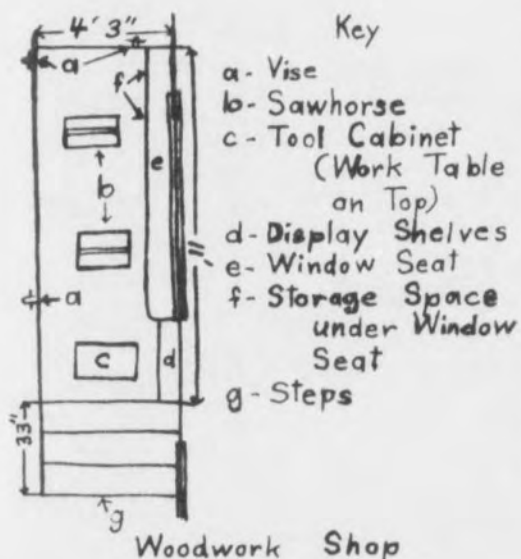
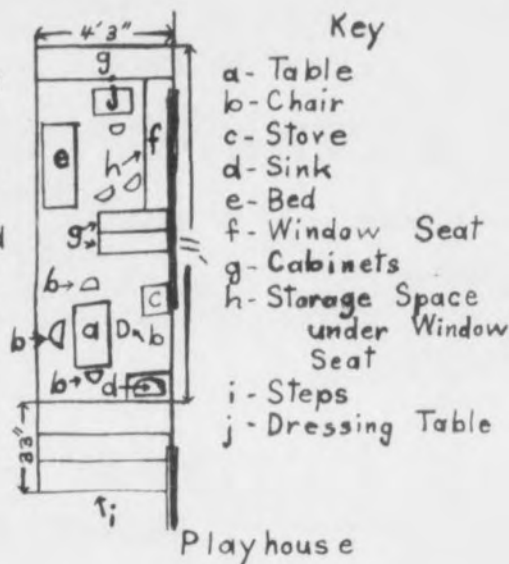
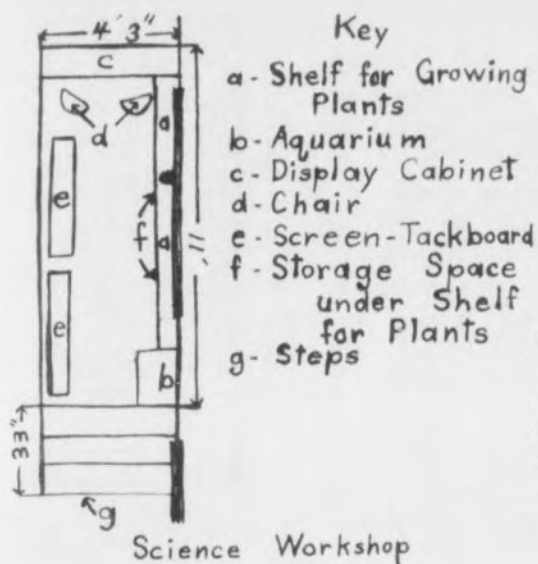
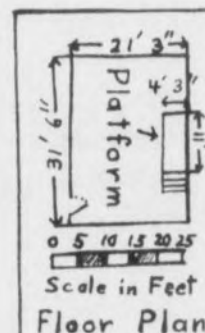
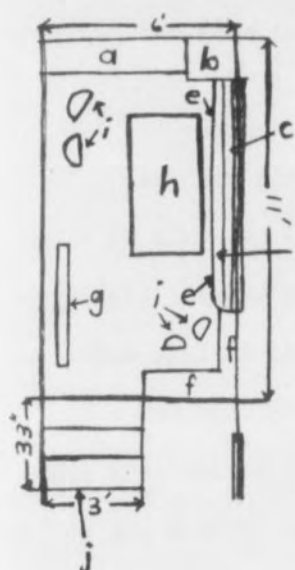


PLATE 12
DETAIL OF PLATFORM (11' X 4'3")

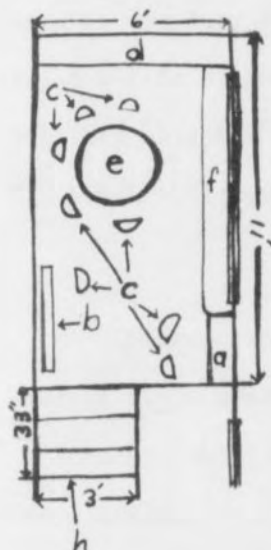




Key

- a - Cabinet for Science Material
- b - Aquarium
- c - Glass Display Shelf (12" Above Bottom of Window)
- d - Window Seat
- e - Storage Space under Window Seat
- f - Museum Cabinet
- g - Screen - Tack Board
- h - Table for Growing Plants
- i - Chair
- j - Steps

Science Workshop



Key

- a - Magazine Rack
- b - Screen - Tack Board
- c - Chair
- d - Book Shelves
- e - Library Table
- f - Window Seat
- g - Storage Space under Window Seat
- h - Steps

Library

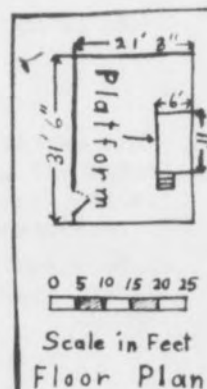
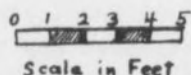


PLATE 13
DETAIL OF PLATFORM (11' X 6')

ment of the room is desired.

An Elevated Floor

Another plan for raising the children to the windows is to build an elevated floor. This floor may be eighteen inches above the original, leaving an air space between the two, which will act as insulation against the outside cold and drafts.

The hall door may be left at the original floor level, and a small area inside the room at the same level be made wide enough to allow the door to open freely. The teacher's wardrobe and cabinets may be opened on to this lower area. Steps should lead from the lower area at the door to the higher floor in the room. If cupboards are built beside these steps, they will leave no place for children to fall off onto the lower area except down the steps. See Plate 14. The library, science, and music centers may be placed near the windows.

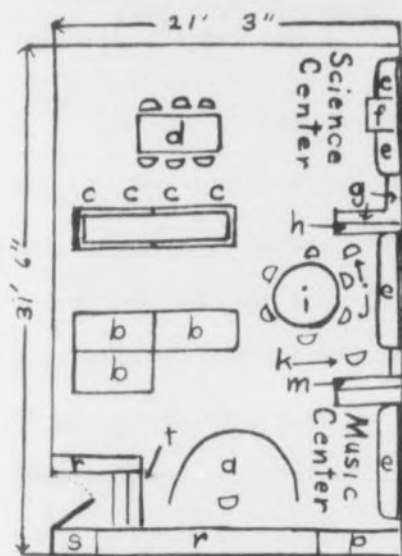
Storage and Display

Storage space has been one of the biggest problems in the average first grade room. The following quotation tells how teachers at Monterey, California, described their needs when a new school was to be built:

. . . Teachers were requested to analyze the activities and teaching procedures in their classrooms . . . They studied the materials of instruction used during the year and were asked to suggest space requirements, convenient location in the room, and proper storage.

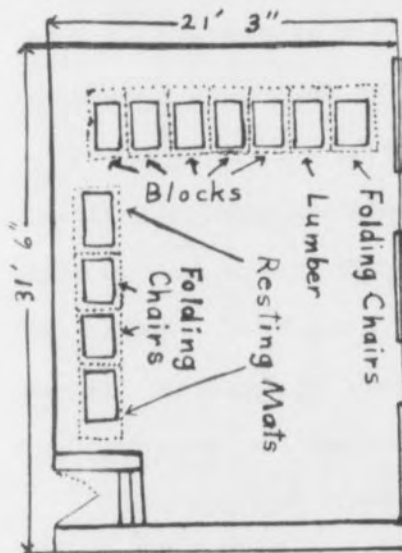
First plea [of the teachers] was for convenient storage space designed for present-day teaching equipment and supplies, and flexible enough to anticipate new needs.

38. Interview with Dr. Franklin H. McNutt, June 14, 1948.



Arranged for
Group Work

- Key
- a-Reading Circle
 - b-Children Playing Number Games
 - c-Child Painting Frieze
 - d-Children Using Clay
 - e-Window Seat
 - f-Aquarium
 - g-Museum Cabinet
 - h-Magazine Rack
 - i-Library Table
 - j-Rocking Chair
 - k-Easy Chair
 - m-Book Shelves
 - n-Shelves for Musical Instruments
 - p-Piano
 - r-Cabinets
 - s-Teacher's Cabinets and Wardrobe
 - t-Steps



Detail of Storage Space
Under Floor

- Key
- Dotted line (-----) shows size of Bins for Storage
 - Solid line (—) shows size of Trap Doors

0 1 2 3 4 5

Scale in Feet

The next was, adequate pinning space, bookshelves, and, attractive display areas.³⁹

Storage Space for Large Equipment

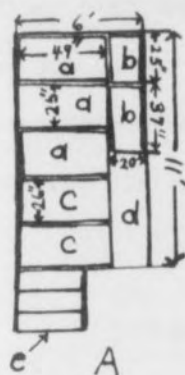
Storage is required for paper of large dimensions needed for art work, large blocks for building and dramatic play, lumber for construction, cots or pads large enough for the children to stretch out for resting, and folding chairs for the parents when they come to school in groups to work with the children or to be entertained by them. Both the platform in front of the windows and the elevated floor supply storage space for large equipment.

Chests or boxes without lids but with rollers so that the children can move them easily when they are full make good storage bins for the resting pads, blocks, lumber, or folding chairs. The space under the platform at the windows is a convenient place for all of this equipment. See Plate 15.

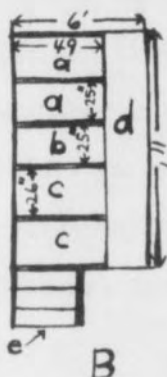
If block play is to be carried on in the balcony where the buildings or other constructions can be left standing as long as the children want to play with them, the blocks may be stored on shelves in the balcony. See Plate 9. Then the space under the platform may be used for the chests of resting pads, a chest for lumber, chests for folding chairs, and space for a pet pen. See Plate 15 B.

The elevated floor will provide ample storage space for large equipment. See Plate 14. Chests or bins for resting pads, folding chairs, blocks, lumber, and a pet pen may be built-in under the elevated

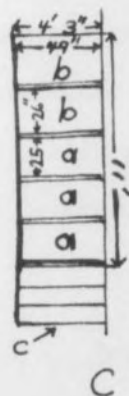
39. J. R. Croad, "Planned and Built for Activity." American School Board Journal, 104:34, January, 1942.



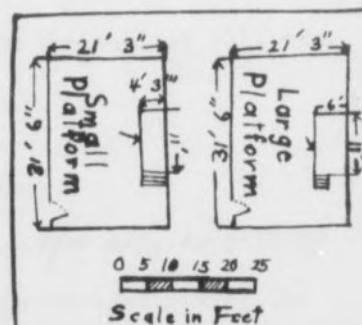
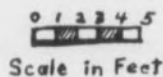
Key
 a-Chest for Large Blocks
 b-Chest for Small Blocks
 c-Chest for Resting Mats
 d-Space for Storage of Pet Pens
 e-Steps



Key
 a-Chest for Folding Chairs
 b-Chest for Lumber
 c-Chest for Resting Mats
 d-Space for Storage of Pet Pens
 e-Steps



Key
 a-Chest for Large Blocks
 b-Chest for Resting Mats
 c-Steps



Floor Plans

PLATE 15
 DETAIL OF STORAGE SPACE UNDER
 PLATFORM

floor near the corridor wall and in front of the cabinets at the back of the room. They should be placed in these areas because it will be more convenient to open trap doors there when the resting pads, folding chairs, blocks, or lumber are wanted.

Movable Cabinets

Cabinets for storage and display should be easily moved and should be planned to serve a wide variety of purposes. To make all cabinets movable, each group may be divided into sections of convenient size and fitted with gliders. They may then be rearranged in the room when they are needed at a different location. Adjustable and removable shelves in every cabinet will also add to their usefulness, since these shelves may then be changed when a different-sized space is needed. Moreover, tackboard may be placed on all doors to furnish adequate display area.

A cabinet with drawers of different depths will give one convenient form of storage for large paper. A movable cabinet thirty inches high, forty-two inches long, and thirty inches wide would give sufficient storage space for this paper, and the top may also be used as a high work table or for display. Gliders on the cabinet will make it easily movable.

Individual Lockers Under Windows

Individual lockers for the children are important, especially when tables without book compartments are used. "Besides giving the pupil a sense of personal privacy, individual lockers give the teacher

40. Margaret S. Miller, "What of the School Environment," Childhood Education, 16:353, April, 1940.

opportunity to encourage habits of neatness.⁴¹ These lockers may be open-faced, or they may have doors which are covered with tackboard.⁴²

Thirty-six individual lockers with each compartment one foot wide, two feet deep, and eighteen inches high are shown under the windows between the radiators. See Plate 16. The door or front of each locker is covered with tackboard, giving the children individual display spaces. The lockers may have "different colored knobs for easy identification."⁴³ These should be placed at the extreme top edge in order not to interfere with the display space. Various designs or pictures can be pasted on the knobs for identification if the knobs are all the same color.⁴⁴ A shelf six inches from the top of the locker gives each child a "clean tight cupboard for the storage of his individual dishes."⁴⁵ The top of each section may be covered with linoleum to form a high work table or a display space in front of the windows where the light is good.

Cabinets Along Front Wall

Cabinets may be placed below and back of the wall writing board. See Plate 17. In the lower part, unfinished class projects may

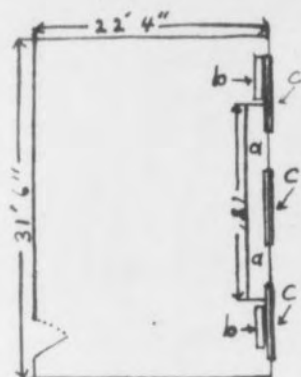
41. Ideas for an Up-to-date Schoolroom, p. 4.

42. H. G. Vest, "Replacing Old Central," American School Board Journal, 107:33, August, 1943.

43. Ideas for an Up-to-date Schoolroom. p. 4.

44. Observed in the Home Economics Nursery at Woman's College of the University of North Carolina, Greensboro, North Carolina, June 9, 1947.

45. "Sanitary Requirements for School Lunches," Journal of Health and Physical Education, 13:83, February, 1942.

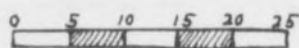


Key

a-Cabinets for Individual Lockers

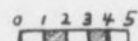
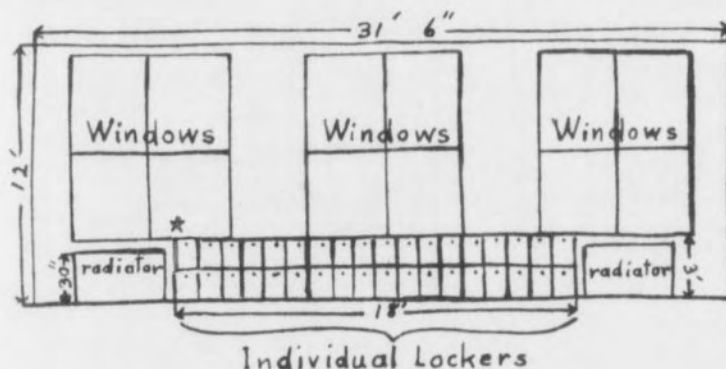
b-Radiator

c-Windows



Scale in Feet

Floor Plan



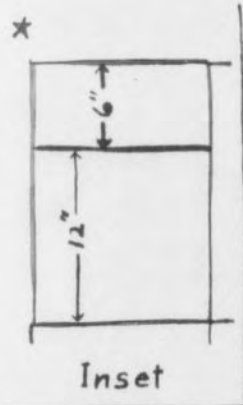
Scale in Feet

Individual Lockers

Key

★ Inset shows detail of open individual locker.

Red outline (—) marks the same area on the full plan above.

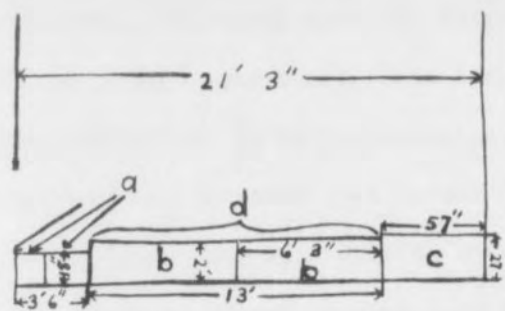


Inset

Wall View

PLATE 16

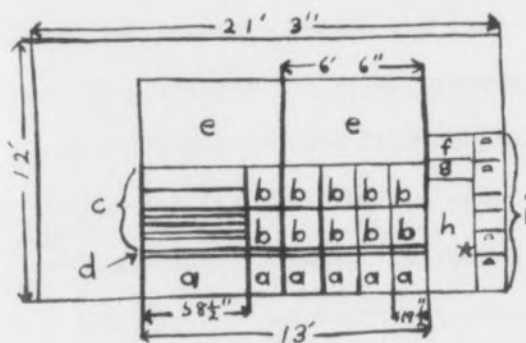
INDIVIDUAL LOCKERS
IN FRONT OF WINDOWS



Floor Plan

Key

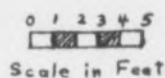
- a - Teacher's Wardrobe and File Cabinet
- b - Cabinets
- c - Piano
- d - Writing Board



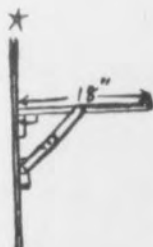
Wall View

Key

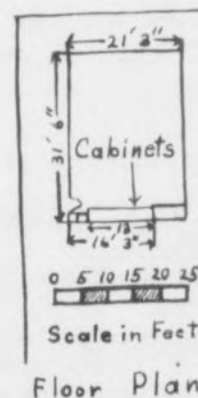
- a - Class Project Lockers
- b - Files for Visual Aids and Other Teaching Material
- c - Map and Chart Cases
- d - Folding Shelf
- e - Writing Board Raised to Show Cabinets
- f - Shelf for Hat
- g - Shelf for Gloves, Purse, etc.
- h - Teacher's Wardrobe
- i - File Cabinets



Scale in Feet



★ Detail of Folding Shelf Attached to Wardrobe Door for Teacher's Desk



Floor Plan

PLATE 17
STORAGE CABINETS
BEHIND WRITING BOARD

be stored. The upper part may be divided into long shallow shelves for large maps and charts, and larger compartments where the audio-visual material, in large envelopes, may be filed in order. A list of the contents, fastened just inside each compartment, will make material easy to find.⁴⁶ The wall writing board may be built to slide upward so that it can be raised to give access to these cabinets.

A teacher's unit is shown between the cabinets just described and the door. It contains a coat closet with a low shelf for overshoes, a rod for coat hangers, and a high shelf for hat, purse, and other belongings. Beside the coat closet is a built-in file cabinet with open shelves for books between the upper and lower sections. Both the coat closet and the file cabinet should be supplied with locks and keys. A folding shelf on the door of the coat closet can be raised to form the teacher's desk. Tackboard may be placed on the upper part of the door for the teacher's individual use. In a similar manner new schools at Fuquay and Buie's Creek in North Carolina each contain a wardrobe closet built-in near her desk for the teacher. See Plate 18.

Cabinets Opposite Windows

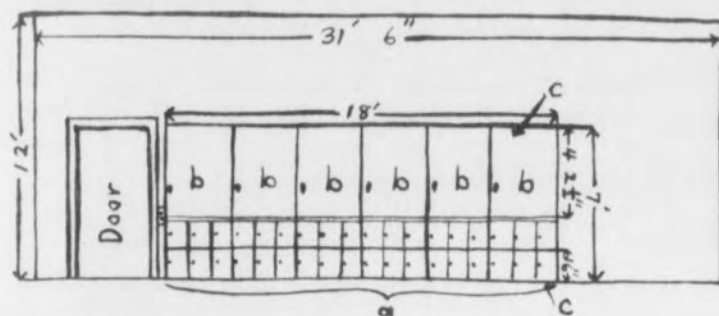
Cabinets two feet deep may be placed along the wall opposite the windows. See Plate 19. The lower cabinets may be arranged as individual lockers for the children's personal belongings (See Plate 16. -Inset) or as wardrobe lockers. See Plate 20 A. These must be supplemented by wardrobe lockers along the back wall. There may be a rod

46. Arrangements of cabinets in the first grade classroom of Miss Lucy Leigh Lovett, as shown and described in interview with Miss Donna Lee Loflin, Principal of Park Street School, Asheboro, North Carolina. August 14, 1948.



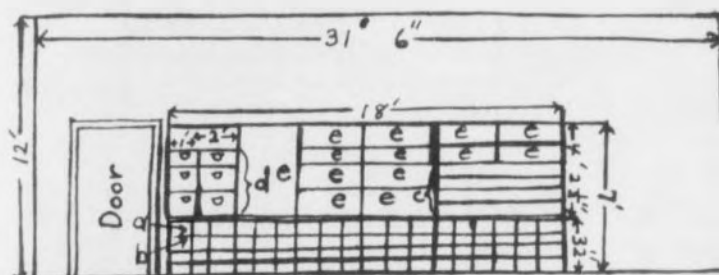
(Scene in new school building at Buie's
Creek, North Carolina)

PLATE 18
TEACHER'S WARDROBE AND CUPBOARD

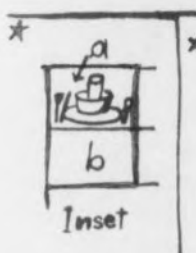


Cabinets Showing Doors Closed

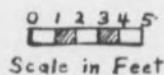
- a- Individual Lockers
- b- Supply Cabinets
- c- Tackboard on All Cabinet Doors



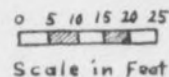
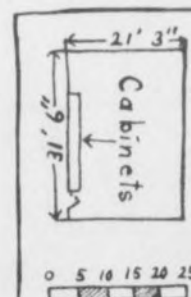
- Key
- a- Shelf for Dishes
 - b- Shelf for Personal Belongings
 - c- Cabinet for Large Charts, etc.
 - d- Files
 - e- Cabinets for Supplies



* Inset shows detail of an open individual locker. The red line (—) marks the same area on the full plan above.

Open Individual Lockers
And Cabinets for Supplies

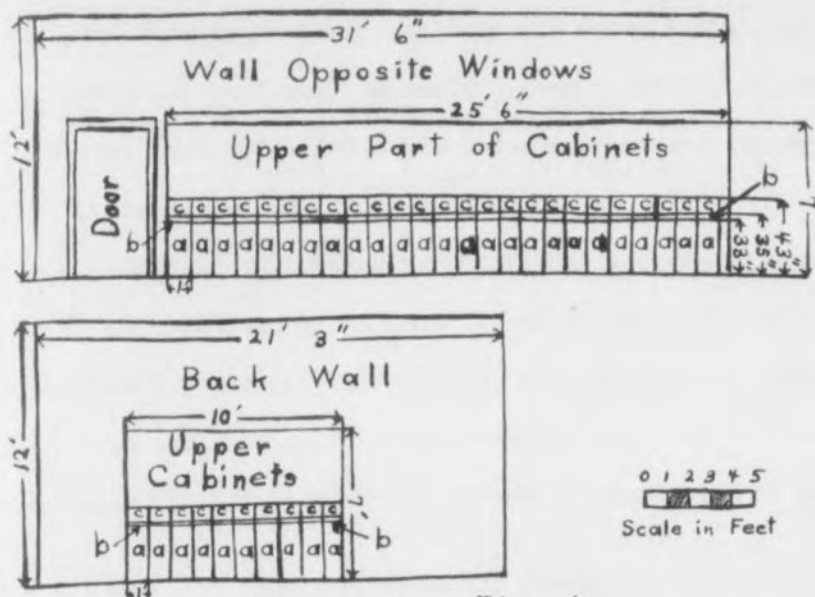
Scale in Feet



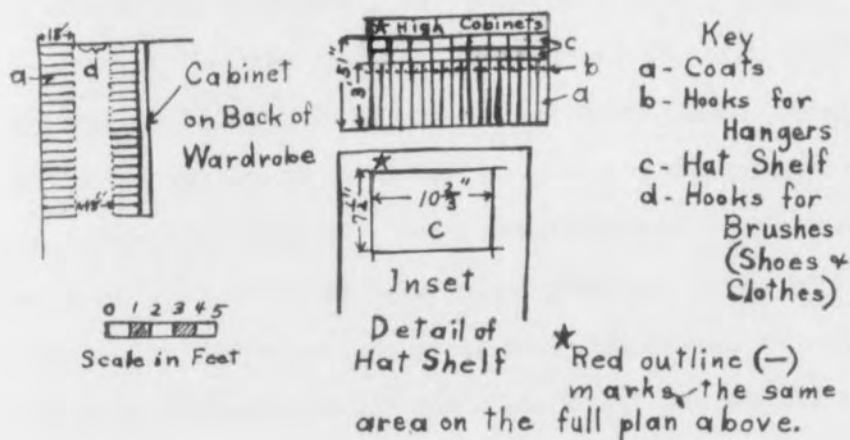
Scale in Feet

Floor Plan

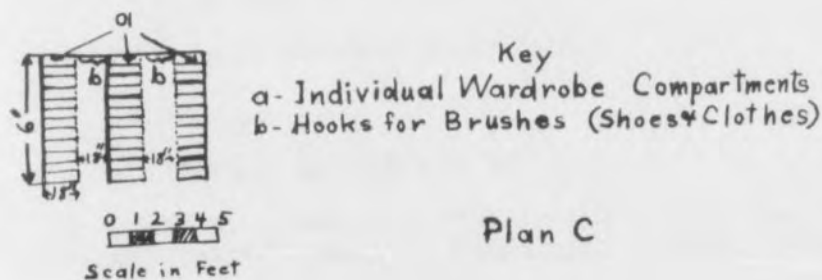
PLATE 19 WALL CABINETS OPPOSITE WINDOWS



Plan A



Plan B



Plan C

PLATE 20
WARDROBE CABINETS

for coat hangers, a shelf for hats and caps, and a place for overshoes and boots on the floor. A heating pipe running along that wall of the room about six inches from the floor may be used "to dry outer clothing during the wet winter weather."⁴⁷

Instead of serving as individual lockers or wardrobe closets, the lower cabinets may be used for class supplies which the children can reach. The upper cabinets may also be used for school supplies, and, although they will be too high for children to reach, they will be accessible to the teacher and parents. See Plates 18 and 19.

Other Wardrobe or Storage Cabinets

On the other hand, the children's wardrobes may be placed at the back of the room opposite the windows. Two such blocks of cabinets are shown (See Plate 20 B.) facing one another at a distance of eighteen inches. Hooks are supplied for coat hangers and hat shelves are placed one above another.⁴⁸ "Over the wardrobes" high cabinets may be built for the use of the teacher and parents. Still another idea for wardrobes is a movable closet six feet wide, seven and a half feet long, and fifty-one inches high. See Plate 20 C. Because the heating pipes along the back wall of the room will not be quite as close to the coat compartments in this as they would be in the other wardrobes, wet outdoor clothing will dry more slowly here.

47. Priaulx, op. cit., p. 47.

48. Ralph G. Stebbins, "Functionalism Minimizes School-Building Costs and Repairs," American School Board Journal, 102:82, May, 1941.

Many other types of storage cabinets might be used. New School buildings at Fuquay and at Buie's Creek in North Carolina are well supplied with a variety of built-in storage space. See Plate 21.

49

One North Carolina first grade teacher uses apple boxes to make open-faced storage cabinets. See Plate 21. The children sandpapered these boxes until they were smooth, then painted them, and fastened four or five together to make an attractive group for cabinets. A new section has been made each year so that each new group of children felt that they had a part in their construction.

Work Area With Its Storage and Display Space

The work area includes a sink and cooking table, the equipment needed for work with paint, clay, and other art materials, a carpenter's bench, and the storage and display space to supply them.

Glass Partition Inclosing Work Area

First, a built-in partition between the work area and the quieter areas in the room is shown. See Plate 22. The lower two feet of the partition may be of wall board or other such material. Above that it should be glass so that the teacher can supervise the work of the children from the main part of the room. Wide double doors may be opened to throw both parts together or to move tables or other furniture from one part to the other. Behind such a partition "group conferences and activities may be carried on under the supervision of the teacher with-

49. Interview with Miss Mary Batts, first grade teacher, Erwin, North Carolina. October 14, 1948.

50. Ibid.

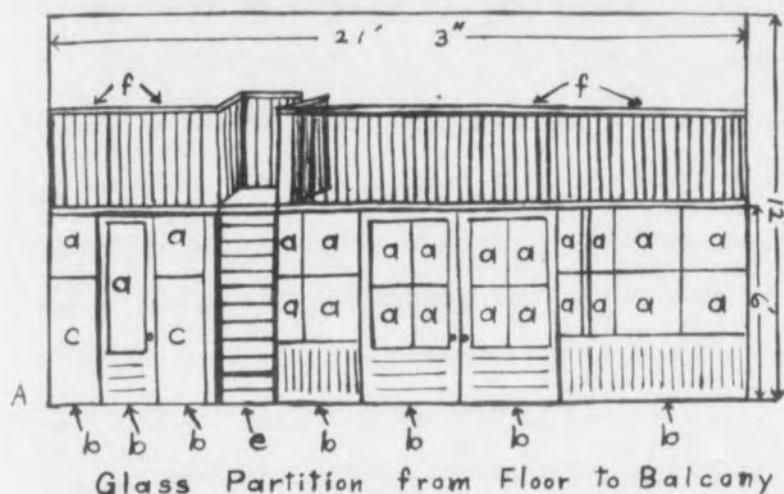


(Scene at Buie's Creek, North Carolina)
Individual Compartments for the Children



(Scene at Erwin, North Carolina)
Storage Shelves Made of Apple Boxes

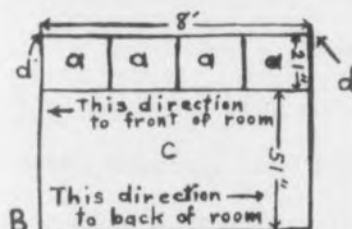
PLATE 21
ARRANGEMENTS FOR STORAGE SPACE



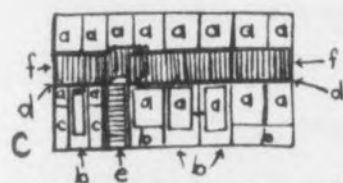
0 1 2 3 4 5
 Scale in Feet
 For Figures A and B

Key

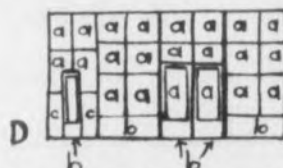
- a- Glass
- b- Built of Wallboard or Wood
- c- Wardrobe Cabinet
- d- Floor of Balcony
- e- Ladder to Balcony
 (Glass Extends behind Ladder)
- f- Railing Extending across
 Open Side of Balcony



Glass Extending from Top of Wardrobe to Balcony Floor



Glass Extending to Ceiling Inclosing Balcony Railing



Glass Extending to Ceiling Without Balcony

0 5 10 15 20 25
 Scale in Feet
 For Figures C and D

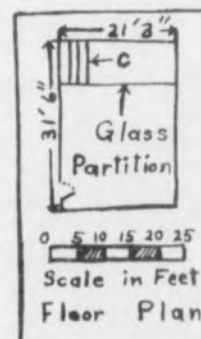


PLATE 22

GLASS PARTITIONS INCLOSING WORK SPACE

51

out disturbance to those in the main room."

In those rooms which have an eight-foot-wide balcony across the back of the room, the work area can be enclosed by building a six-foot partition from the floor of the room to the floor of the balcony. If desired, the glass partition can be extended to the ceiling (See Plate 22 C.) so that the balcony can be used more freely as an extension of the work area (construction and dramatic play with blocks and dolls) without disturbing the work in quieter areas.

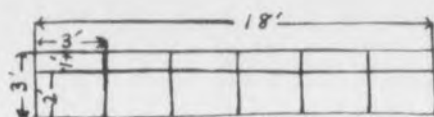
If the wardrobe is located at the back of the room in two blocks of cabinets, one block will extend into the room. In that case there should be either a glass door into the wardrobe or a glass partition from the top of the wardrobe which extends into the room to the floor of the balcony. See Plate 22 B. The glass partition or door will allow light from the windows to enter the wardrobe.

Movable Cabinets Arranged to Form Work Alcove

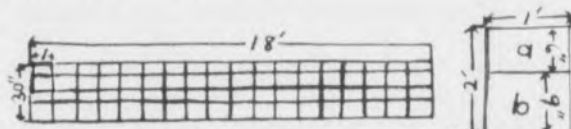
Instead of a partition, a group of movable cabinets may be arranged to form a work alcove. They will also provide a large work table, storage space, and display space. Individual compartments for cleaning equipment, such as a bath cloth, "towel, soap . . . tooth brush," nail brush, nail clippers, comb, and hair brush may be in these cabinets on the side which opens into the work area. See Plate 23 A. Or a cupboard for such cleaning equipment may be placed nearer the sink. See

51. Jack M. Logan and M. B. Cleveland, "Longfellow School: Complementary Accounts," American School Board Journal, 106:34, April, 1943.

52. Engelhardt, "Elementary Public School Design," p. 91.



Plan A, B, and C. (Floor Plan)



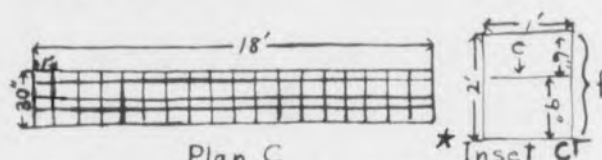
Plan A

Cabinets Facing Work Space (Vertical View)
Used for Cleaning and Eating Equipment



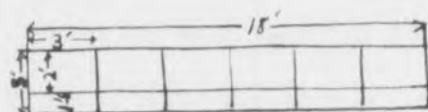
Plan B

Cabinets Facing Work Space (Vertical View)
Used for Eating Equipment and Art Supplies

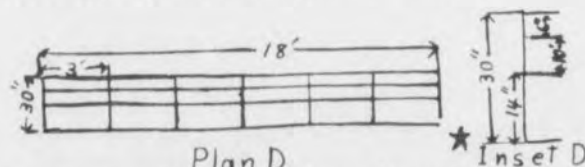


Plan C

Cabinets Facing Front of Room (Vertical View)
Used for Children's Individual Compartments



Plan A, B, and D (Floor Plan)



Plan D

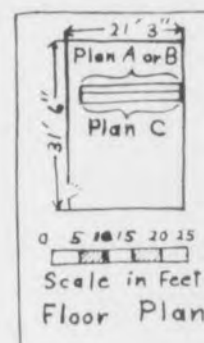
Cabinets Facing Front of Room (Vertical View)
Used for Display Purposes

0 1 2 3 4 5
Scale in Feet

*Insets A, B, and C show detail of one individual compartment from each plan. Red outline (—) marks same area on full plan to the left.

Key

- a-Compartment for Dishes, Silver, etc.
- b-Compartment for Towel, Tooth Brush etc.
- c-Zinc-lined Cabinets for Clay
- d-Cabinet for Cold Water Paint and Brushes
- e-Removable Shelves
- f-Individual Lockers



*Inset D shows detail of shelves. Red outline (—) marks same area on full plan to the left.

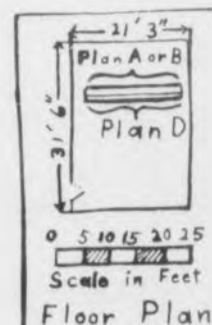


PLATE 23

MOVABLE CABINETS

BETWEEN WORK SPACE AND MAIN ROOM

Plate 24. In this case, half of this side of the movable cabinets may be used to give each child an individual compartment for his dishes. See Plate 23 B. Two sections of these cabinets, each a yard long, may be "Zinc-lined"⁵³ and used for storing unfinished clay objects. The section nearest the sink may hold cold water paint and brushes. At the same time, the side of these movable cabinets facing the front of the room make good individual lockers (See Plate 23 C.) or display space. See Plate 23 D. "Glass"⁵⁴ doors on these cabinets make attractive display cases, but they are more expensive.

Full-length Mirrors

Full-length mirrors on the doors of either the wardrobe cabinets or the cupboard for cleaning equipment will be convenient for the children to use. See Plate 25. They may be hung in such manner as to form a triple mirror when the wardrobe or cupboard doors on each side of the central mirror are opened. Or again, mirrors may be hung on the side of tall cabinets instead of on the door. See Plate 26.

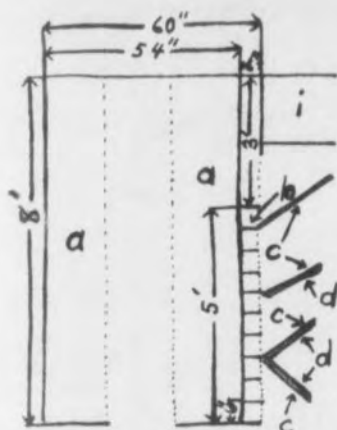
Equipment for Cleaning the Floor

"Because young children are on the floor much of the time for their work and play activities,"⁵⁵ the floor must be kept as clean as

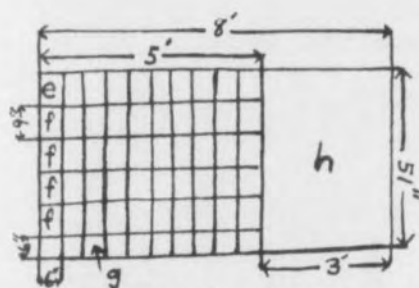
53. Robert J. Forbes and Herbert J. Powell, "Redland's Lincoln Elementary School Expresses Inter-Americanism," American School Board Journal, 104:35, May, 1942.

54. Richard J. Neutre, "Postwar School in Its Neighborhood Context," Nation's Schools, 33:39, March, 1944.

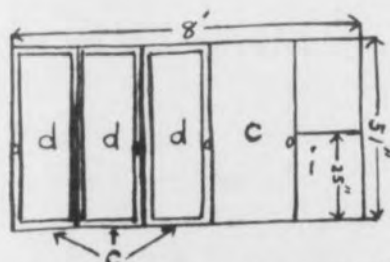
55. Amanda Hebel, "New Schools for Old," Childhood Education, 16:270, February, 1940.



Cupboard for Cleaning Equipment - Mirrors (Floor Plan)



Cupboard for Cleaning Equipment As Seen without Doors (Wall View)



Mirrors on Doors of Cupboard for Cleaning Equipment

Key

- a-Wardrobe Cabinet
- b-Individual Compartment for Bath Cloth, Towel, Tooth Brush, Soap, etc.
- c-Door of Cupboard for Cleaning Equipment
- d-Mirror Hung on Door of Cupboard
- e-Individual Compartment for Use of Teacher or Parent
- f-Individual Compartment for Use of Child
- g-Compartment for Cleaning Cloths and Small Brushes for Cleaning the Room
- h-Closet for Brooms, Mops, and Cleaning Brushes
- i-Work Table or Drain Board with Cabinet Beneath

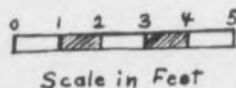


PLATE 24

CUPBOARD FOR CLEANING EQUIPMENT

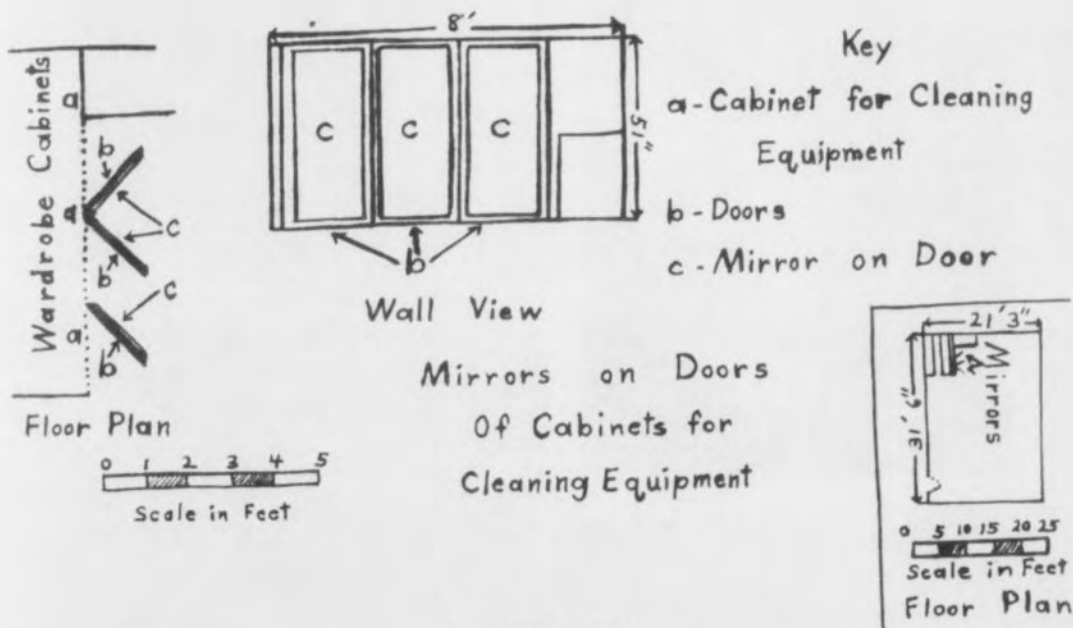
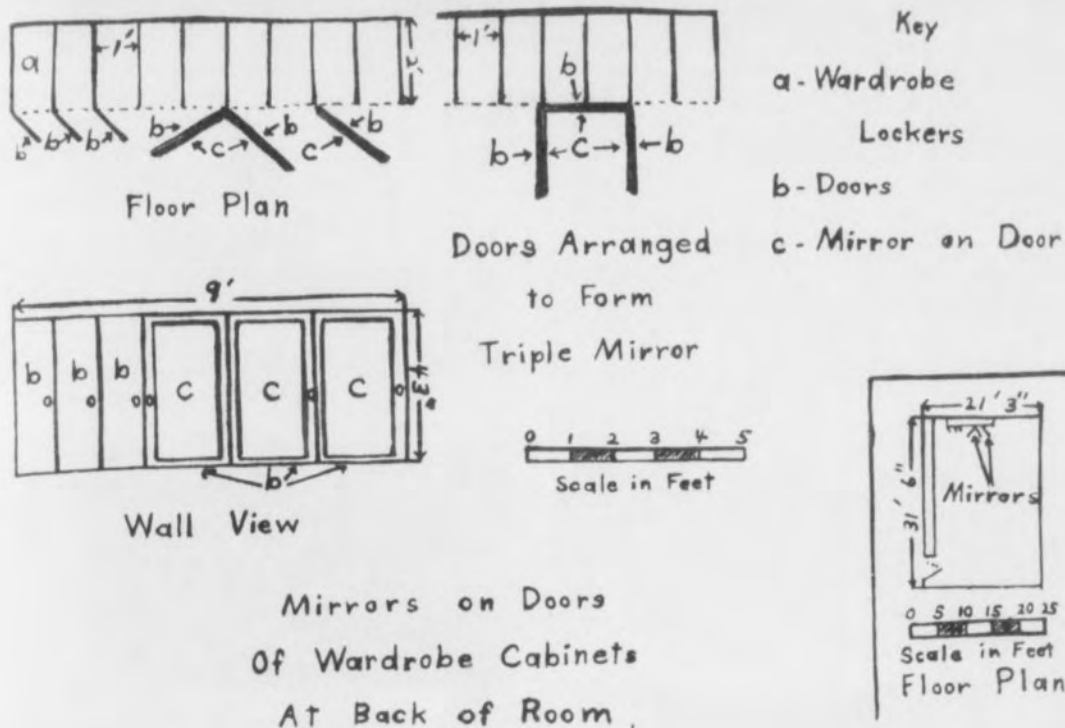


PLATE 25

FULL-LENGTH MIRRORS

HUNG ON CABINET DOORS



Mirror
Hung on Cabinet

(Scenes at Erwin, North
Carolina)

Child
Using Mirror



PLATE 26
FULL-LENGTH MIRROR
HUNG ON SIDE OF TALL CABINET

possible at all times. A mop or a sponge "cleaner and waxer,"⁵⁶ with a mechanical wringer, may be helpful in the frequent washing and waxing of the floor. However, a damp mop can not be used through the day,⁵⁷ and a broom only raises dust. Therefore, a vacuum cleaner seems to be the best solution. Smalley states that "most industrial vacuum⁵⁸ cleaners can be used for picking up water, soapsuds," and other such material. Although a domestic cleaner may not fill such needs and will be too light for cleaning the entire building, it will be easier for the teacher and children to use and sturdy enough for any cleaning they will need to do through the day.

Sinks or Wash Basins

Investigations of the literature on school equipment indicates what an important part is played by a sink or wash basin with, if possible, both hot and cold running water. A work center would be very unsatisfactory without it. Washing and drinking facilities, as well as other equipment, must be adapted to the use of the small children.⁵⁹ When such facilities are too high, "a step-like elevation," a box or a platform, will help to raise the child to them. See Plate 27.

56. Du-fold: All Purpose Cleaner and Waxer, The Du-fold Mop Manufacturing Company, 2150 East Eighteenth Street, Cleveland 15, Ohio. pp. 1-4.

57. Interview with Dr. Franklin H. McNutt, July 8, 1948.

58. Dave E. Smalley, "Vacuum Cleaners for Schools," American School Board Journal, 116:47, May, 1948.

59. "Adopt Standards for Drinking Fountains," Nation's Schools, 16:46, August, 1935.



Platform at
High Drinking Fountain

(Scene at Erwin, North Carolina)

Long, Low Sink
Found in
Fuquay School



(Scene at Fuquay, North Carolina)



Circular, Fountain-Type
Wash Basin in
Lowes Grove School

(Scene at Lowes Grove, North Carolina)

PLATE 27

DRINKING AND WASHING FACILITIES

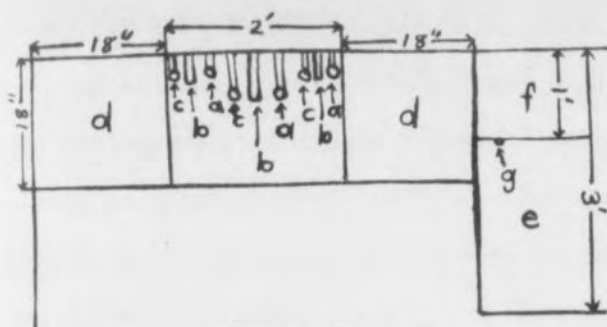
A sink with three faucets, each supplying a mixture of hot and cold water, will be found in Plate 28. Drain boards are hinged so that they may be **dropped** out of the way when children wish to stand at the ends of the sink as well as in front. In this way three or more children can work around the sink without being crowded. The drain boards themselves will make good tables for work in which water is used. The new schools at Fuquay and Buie's Creek, North Carolina, have long sinks. See Plate 27. They, too, are placed low enough for the children to reach them comfortably. Built-in storage spaces with table tops are near enough these sinks to be used as work tables. A long sink could also be placed at the back of the room with cabinets built under and over it and with one drain board instead of two. See Plate 28.

In the Lowes Grove School of Durham County, North Carolina, a semicircular wash bowl has been installed in a wide hallway near the lunch room so that children may wash their hands as they go in to eat. See Plate 27. Two paper-towel dispensers and a trash can to catch the used towels are near.

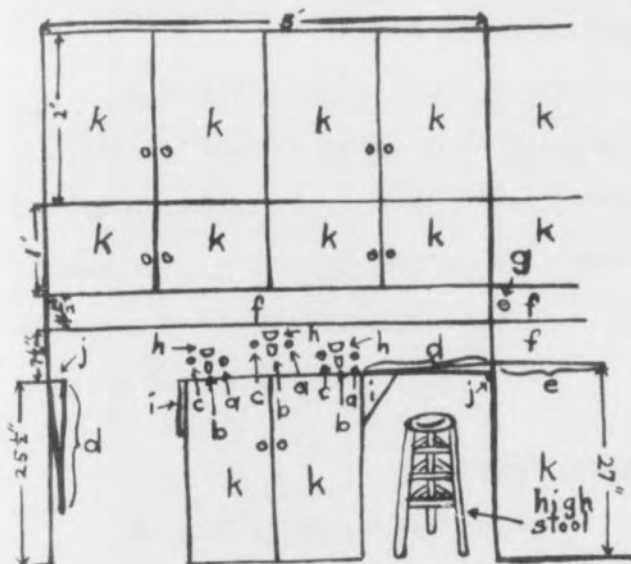
This bowl is a large, semicircular basin with a rod at the bottom which, when stepped on, produces a fountain-type spray from the head of the fountain, covering the whole semicircular area of the fountain. Five to ten children may . . . wash . . . at any one time [without being crowded] and still be in complete view of the teacher.⁶⁰

The semicircular bowl is rather large for a small classroom but its advantages may out-weigh the inconvenience of its size. If it is used, a drain board may be hinged to the cooking table so that this board can fold back on top of the table when not in use. When in place,

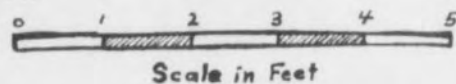
60. Swanson and Hosler, op. cit., p. 56.



Floor Plan



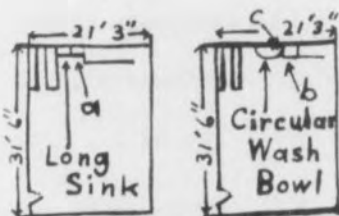
Wall View



Scale in Feet

Key

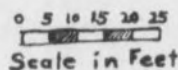
- a - Spigot for Cold Water
- b - Spout
- c - Spigot for Hot Water
- d - Drain Board
- e - Cooking Table
- f - Open Shelf
- g - Electrical Outlet
- h - Soap Dish
- i - Brace
- j - Hinge
- k - Cupboard

Scale in feet
Floor Plan

Showing Other Wash Basins

Key

- a - A Single Drain Board on One Side
- b - Drain Board Hinged to Cooking Table
- c - Extra Spigots (Hot and Cold)



Scale in Feet

PLATE 28

WASHING AND COOKING CENTER

ready for use, it drains into this basin. See Plate 28.

An extra faucet with hot and cold outlets will be necessary with the semicircular, fountain wash-bowl to supply water for cooking, for mixing cold water paint, and for other purposes. The faucet may be placed in the back wall of the bowl nearest the cooking table so that it drains into the bowl.

A Drinking Fountain

A drinking fountain may be located at one side of the sink or wash-bowl so that it drains into them (See Plate 27.) or may be separate. (See Plate 27, the Circular Wash Bowl. The drinking fountain is at the extreme right.) The drinking fountain must conform to the specifications sponsored by the United States Public Health Service and approved by the
61
American Standards Association.

Equipment for Eating

Mackintosh brings another point into consideration when she declares: "practice in preparing and eating foods in attractive sur-
62
roundings" is an important part of the curriculum. Beatty states that "many desirable learning experiences may be related to the preparation
63
of food, especially in connection with simple cooking." Gesell comments that "a friendly atmosphere at mealtime is of importance, because enjoyment . . . is still the best aid to appetite." He goes on to discuss

61. "Adopt Standards for Drinking Fountain," p. 46.

62. Helen K. Mackintosh, "Nutrition - A Part of the Elementary School Program," School Life, 26:164, March, 1941.

63. Beatty, op. cit., p. 330.

the difficulty the small child has in practicing good table manners while he eats and the need to

make gradual rather than excessive demands; avoid complexities; make concessions; simplify the mealtime situations; rely on favorable atmosphere and attitudes.⁶⁴

These things can be more readily accomplished with first grade children if they eat in their own smaller grade group and familiar classroom surroundings.

A built-in or movable table near the wash basin or sink can be used in preparing food and cooking. One or more electrical outlets make possible the use of a hot plate. Yager suggests "an electrical outlet . . . on each of the four walls . . ." Millgate and Coelln⁶⁵ warn against placing electrical conduits in the wall which may have to be moved if the building is remodeled but recommend that "electrical conduits should be placed in floors or load-bearing walls."⁶⁶ Beatty⁶⁷ recommends a number of electrical wall plugs, while a group of architects who are members of School Planning Associates suggest that "all electrical controls be placed in a single panel for ease of control and operation."⁶⁸

64. Arnold Gesell and Frances L. Ilg, The Child From Five to Ten. New York: Harper and Brothers Publishers, 1946. pp. 239-240.

65. S. A. Yager, "If We Were Building Again," American School Board Journal, 105:30, November, 1942.

66. Irvine H. Millgate and O. H. Coelln, Jr., "Standards for Visual and Auditory Facilities in New Educational Buildings," The American School and University, Eighteenth Annual Edition. New York: American School Publishing Corporation, 1946. p. 139.

67. Beatty, op. cit., p. 330.

68. School Planning Associates: Architects, "Modern Elementary Classroom Design." American School and University, Thirteenth Annual Edition. New York: American School Publishing Corporation, 1941. p. 289.

The Joint Committee on Health Problems in Education urges that⁶⁹
 dishes must be carefully washed and "scalded with water over 170 F."
 If, as the children wash the dishes, they place them in wire dish racks
 on the drain board, the teacher can pour the scalding water over them
 without much loss of time. Then they should be placed in clean, tight
 cupboards of the type already described.

If children carry lunches, sanitary storage space must be arranged for them. Milk or other food which needs to stay cold should be placed in as cool place as possible. The remainder of the lunch may be kept on the wardrobe shelf which holds hat or cap and gloves, (See Plate 20.) or it may be placed with the child's individual dishes. See Plates 16, 19, and 23. His individual locker is a convenient location if care is taken that it is sanitary and that the lunch is packed in such way that it does not spoil his other belongings. See Plates 16, 19, and 23. Croad mentions "a novel revolving stand for pupil's lunches . . . [which is] fully ventilated and entirely⁷⁰ sanitary."

Equipment for Painting

Equipment and storage space for the work in art and for construction belong in the work area. Schulte suggests a "paint cabinet⁷¹ above" the sink, and Van Dorn speaks of "paint jars and brushes on

69. "Sanitary Requirements for School Lunches." p. 83.

70. Croad, op. cit., p. 36.

71. G. H. Schulte, "New Type of Elementary School," American School Board Journal, 114:49, January, 1947.

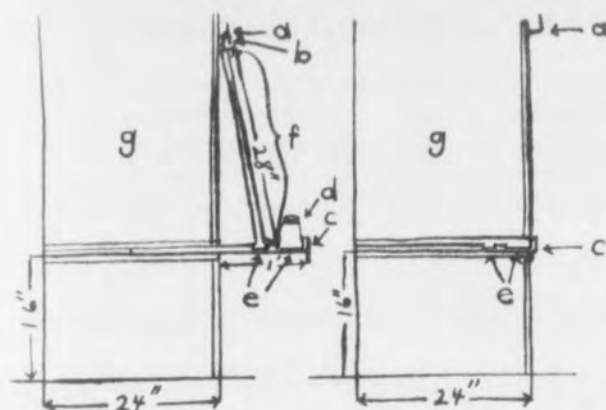
shelves . . . near running water."⁷² If space can be found in the cabinets above the sink, the paint jars and brushes may be placed there. Or if a partition is used between the work space and the main room, movable or built-in cabinets may be placed against this partition wall to a height of two feet. The section nearest the sink may then be used for paint jars and brushes. In addition De Hetre describes still another arrangement: "The base of the easel is a small cabinet for the storage⁷³ of water color jars or similar material." In any case, a place as near the sink as possible should be found for them.

Next, a place for painting is needed. A double easel where two children can paint at any time may be supplemented by removable easels. If the lower part of the cabinets opposite the windows is divided into two compartments, each sixteen inches high, sliding shelves may be constructed between the two compartments at a height of sixteen inches from the floor. Pulled out one foot in front of the cabinets, these shelves will furnish a base for tilted easel boards which may be removed when not in use or may be turned and used on the other side for tack-board. See Plate 29 A. In developing a similar point, Van Dorn mentions⁷⁴ "Folding brackets that can support beaver board easels." Brackets of this type may be fastened to the wardrobe doors and separate small tables constructed for paint jars and brushes. See Plate 29 C.

72. Viretta Van Dorn, "A Good Room for the Fives," Childhood Education, 22:289, February, 1946.

73. Jerome C. De Hetre, "To Meet War-time Needs," Nation's Schools, 31:39, April, 1943.

74. Van Dorn, op. cit., p. 289.

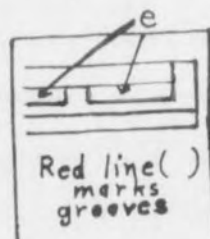


Key

- a - Staple or Nail Holding Easel
- b - Hook Holding Easel Steady
- c - Sliding Shelf (Pulls Out One Foot. Makes a Rest for Easel.)
- d - Paint Jars
- e - Grooves to Hold Easel and Paint Jars Securely
- f - Easel
- g - Cabinet

Sliding Shelf
Pulled Out
To Form Rest
for
Removable
Easel

Sliding Shelf
Pushed in
While
Easel
Is Not
In Use



Inset

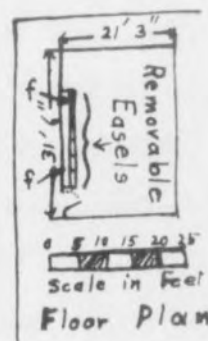
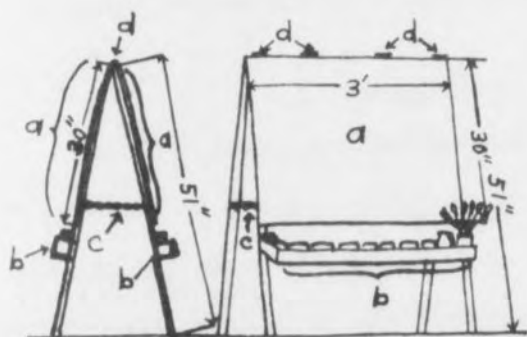
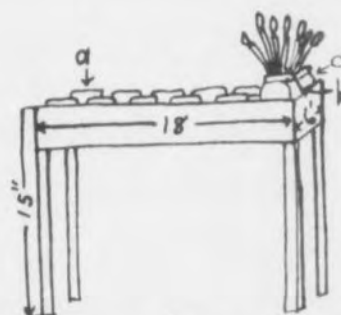


Figure A
Removable Easels Hung on Cabinet Doors



- Key
- a - Painting Surface
 - b - Trough for Paint and Brush Jars
 - c - Chain or Strong Rope
 - d - Hinges

Figure B - Double Easel



Key

- a - Jars for Paint
- b - Jar for Brushes
- c - Jar for Clean Water

Figure C
Table for Paint and Brushes

Swanson and Hosler state that

a strip of reversible chalk and pin boards . . . located in this front wall . . . may be lifted out and reversed. [The reversible boards are also provided with an extension at the chalk trough level which will permit these boards to be placed at an angle and provide an easel on which children may work. ⁷⁵

A committee made up of the staff of the Sixteenth District Public Schools, Elmont, Long Island, New York suggests "Built-in easels . . . the kind that swing down from the wall" and adds that they are "more stable than the movable type." ⁷⁶ Beaver board easels might be fastened to the upper doors in such a way that they could swing down when in use. When up, they could be fastened by a hook, and the side exposed in this position could be used as high bulletin board space. The shelves just described (See Plate 29.) could be pulled out so that the easels could rest upon them and the paint and brush jars be set at the front edges of the shelves. Easels may also serve as tackboard if ⁷⁷ they are "protected with a water repellent cloth when used for painting."

Equipment for Clay Modeling

Clay belongs in the wet area. Tables on which it is used should be made of, or covered with, a material which will not be harmed by water or any amount of washing. Accordingly, if the nested tables are covered with plastic or linoleum, they will serve well as clay tables.

75. Swanson and Hosler, op. cit., p. 56.

76. Cora Beard and others, "Elementary School Classroom Design - Specifications of Teachers." American School and University, Eighteenth Annual Edition. New York: American School Publishing Corporation, 1946. p. 207.

77. De Hetre, op. cit., p. 39.

Otherwise, clay boards may be used to protect the tables. Cabinets or bins which are to hold clay for modeling must be zinc-lined to keep the clay from becoming too dry. A zinc-lined bin may be made of the right size to push under the art storage cabinets. See Plate 30. On the other hand, Mingo recommends "covered jars for clay." Further-
more, a zinc-lined cupboard may be located in cabinets near the work space to supply storage for unfinished clay work. See Plates 23 and 30.

Equipment for Working with Wood

Woodwork also requires a work bench or table with one or more vises. This may be a large, strong wooden box with vises fastened to the top edges, tools hung on nails on the inside, and wood or lumber stored inside, below the tools. Van Dorn mentions "sturdy work tables that may be pushed under [shelves] when not in use." Katterle and Rothe describe a work bench which "has thirty-six compartments for holding pupil's work."

In like manner, a carpenter's bench or table with two vises is shown in the work area ready for use: (See Plate 30.) it may be pushed under the cabinets when not in use. See Plate 30. A chest for lumber is made the right size to fit under the carpenter's bench. "Noiseless

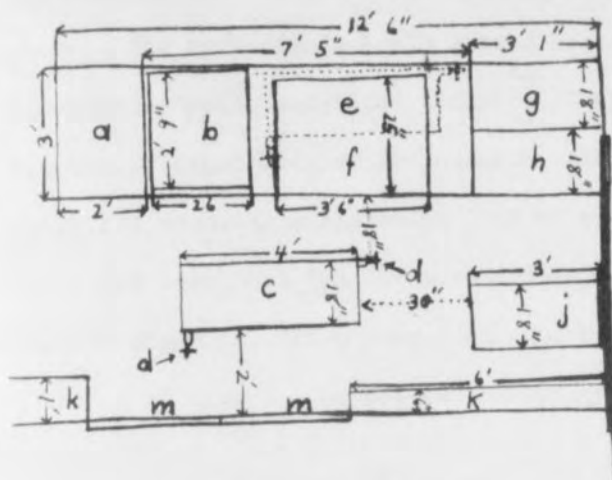
78. Forbes and Powell, op. cit., p. 35.

79. Jane C. Mingo, "Good School Housekeeping," Better School Homes for Children. Bulletin. Washington, D. C.: The Association for Childhood Education, [n. d.] p. 21.

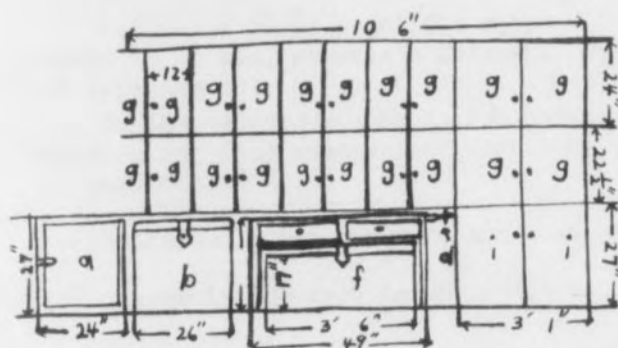
80. From a class lecture by Dr. Eugenia Hunter, July 2, 1946.

81. Van Dorn, op. cit., p. 289.

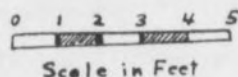
82. Zeno B. Katterle and Walter Rothe, "Planned and Built for Small Children," American School Board Journal, 102:35, February, 1941.



Floor Plan



Wall View



Key

- a - Clay Cabinet (Zinc Lined)
- b - Zinc-Lined Clay Bin (Movable)
- c - Carpenter's Bench
- d - Vise
- e - Place under Cabinets for Carpenter's Bench
- f - Chest for Lumber
- g - Upper Part for Cupboards
- h - Upper Part for Table or Display Shelf
- i - Lower Part - Cupboard for Large Paper
- j - Double Easel
- k - Movable Table-Top Cabinets
- m - Wide Double Doors



PLATE 30

ART AND CONSTRUCTION CENTER

83
casters" on this and the lumber chest make them easily movable.

The carpenter's tools should be carefully selected. Perkins
84
recommends "real, man-sized tools." Taylor suggests sawhorses, saws,
hammers, clamps, drills, tri-squares, and sandpaper blocks, besides
nails and wood, as a beginning list of equipment for a first grade
85
group and says that "as the need arises for others they are added."
Tippett suggests, "Plan your tool equipment carefully. Add to it over
a period of time." She offers the following criteria for selection of
tools:

Are the tools suitable for the age and interests of the child using them? Consider the child's stage of motor control and muscular strength. Do they serve the number of children involved?

Are the tools of good quality, adequate to long and hard usage? Can they be resharpened, reconditioned, and broken parts replaced?

Will they build a child's respect for tools as a functional means to an end, stimulate interest, and encourage a wider variety of experiences?

Do they afford the means for developing in children appreciation for fine examples of furniture and construction, in wood, in many forms?⁸⁶

Nails and other hardware and some small tools may be kept in a shallow drawer in the work bench or table. Other tools which should not

83. N. L. Engelhardt, "America's Best Elementary Classrooms," School Executive, 63:55, June, 1944.

84. L. B. Perkins, "When Teachers, Janitors Build the Schools," American School Board Journal, 103:35, September, 1941.

85. Ethel R. Taylor, "Observations of a Class in Woodwork," American Childhood, 33:7, May, 1948.

86. Mary Allen Tippett, "Tools and How to Use Them." Leaflet Number 5. Portfolio on Materials for Work and Play. Washington, D. C.: The Association for Childhood Education, [n. d.] p. 4.

lie flat may be hung at one end of the work bench, or a tool panel can be made with boards fastened securely to a wall space. Tools, together with paint, stain, and shellac, may be kept in the cabinets at the back of the room. Tippet also suggests that tools which need to hang be supported by "right angle screws, metal, screw-on tool holders, large nails, or short, horizontal dowel stakes." She advises:

Plan the arrangement of tools so that saws can hang, planes can be stored on their sides and small tools will be protected from loss and the dulling of sharp points or edges. Hammers can hang by their heads and files and screwdrivers can stand in grooves cut out of the tool rack surface or slotted into strips of wood.⁸⁷

88

Croad mentions a "removable tool cart." A rubber-tired wheel cart can be used in all parts of the room to move such things as art supplies, blocks, carpenter's tools and supplies, food and dishes. See Plate 31 A.

Storage for Art Supplies

At the same time part of the cabinets along the back wall may be used for storage of art supplies, including large paper of several kinds: rolls "of brown pigskin paper twenty-four inches wide . . .
⁸⁹
 of white unglazed wrapping paper eighteen inches wide," and stacks of smaller paper of all sizes, types, and colors. In regard to this,

87. Ibid.

88. Croad, op. cit., p. 37.

89. Lottie Suitter, "Descriptions of Independent Work Periods with Centers of Interest to Stimulate Activities," Independent Work Periods. Bulletin. Washington, D. C.: The Association for Childhood Education, 1941. p. 26.

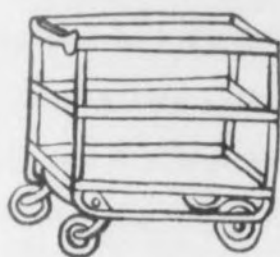
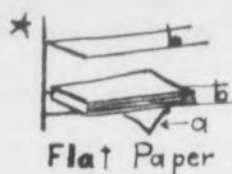
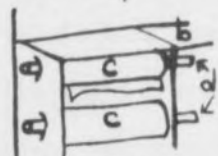


Figure A - Cart
(Rubber-Tired
Wheels)



Flat Paper



Rolls of Paper

Key

a - Tab of Cardboard
Extending over
Edge of Shelf

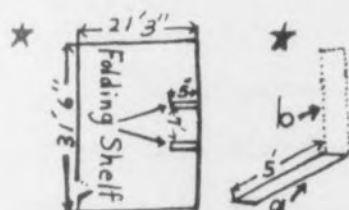
b - Shelf

c - Roll of Paper

d - Roller

*From "Give Us Adequate Storage
Space," by L. B. Perkins
Nation's Schools, 37: 37, Feb., 1946

Figure B
Ideas for Storage of Paper

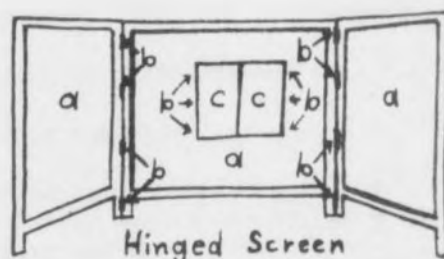


Key

a - Folding Shelf
b - Space Shelf Will
Fill When
Folded Against
Wall

*From "America's
Best Elementary
Classrooms," by
N. L. Engelhardt
School Executive
43: 55, June, 1944

Figure C
Folding Shelf



Hinged Screen

Key
a - Display
Space
b - Hinges
c - Window
Blinds



Screen on Standard

Figure D - Screens

PLATE 31

EQUIPMENT FOR ART AND CONSTRUCTION

Perkins makes two helpful suggestions: that rolls of paper be mounted on rollers as wrapping paper is arranged for use in a store and that large, flat paper be laid on the shelf on top of a piece of cardboard with a tab of the cardboard extending over the edge of the shelf. The cardboard will slide on the plywood shelf far enough to permit removal of sheets of the paper and can then be pushed back in

90
place. See Plate 31 B. Paste, scissors, rulers, weaving loom and materials, sewing materials, and whatever other tools or supplies the children will use for their work may be stored in the cabinets near the work area.

The Wall Writing Board

Investigation of the literature indicates that the majority of writers agree with Credle when he says, "Twelve linear feet of wall writing board is ample for the primary room. This should be placed on the front wall."⁹¹ A preference for green or pastel shades over black is also indicated. Paul F. Nocka reports that the

Sylvania Electric Products Company . . . used one of the elementary public school rooms in Salem, Massachusetts, as a testing laboratory for improving lighting and seeing conditions. Eliminating the dark floor, furniture, blackboards, and bulletin panels was the first step toward achieving control of glare. . . . Light peach [the same color as the walls] was chosen for chalkboards by the Sylvania engineers after numerous colors were tested for the minimum amount of change in color effect when switching from daylight to artificial light.⁹²

90. Lawrence B. Perkins, "Give Us Adequate Storage Space," Nation's Schools, 37:37, February, 1946.

91. Credle, op. cit., p. 302.

92. Paul F. Nocka, "Chalkboard and Its Future." American School and University, Eighteenth Annual Edition. New York: American School Publishing Corporation, 1946. p. 210.

Fawcett recommends "one ivory board . . . in the front of each classroom . . . as a projection screen for sound pictures and slides."⁹³

Next, chalk dust seems to be generally recognized as a health hazard, a nuisance and expense. Speaking of a new school building in Wilmington, Delaware, Ross L. Neagley states:

Instead of blackboards, each room is equipped with one large section of delicate pastel colored crayon board . . . Soap crayon is used instead of chalk. These boards are not only easier to read but chalk dust in the room is eliminated.⁹⁴

Finally, Nocka, discussing the use of glass, reports that Sylvania engineers used a glass chalkboard but were unable to get pre-war glass chalkboards, "most of which had the color and abrasive fused into the outer surface."⁹⁵ These pre-war boards were more satisfactory. In addition reversible boards, a writing surface on one side and cork on the other, or swinging sections of reversible writing and cork board are suggested.⁹⁶ The cork board may be used as tackboard or as an easel. Forbes comments, "A unique method of providing more bulletin space [is] to equip the rooms with sliding [cork] boards which may be pulled down over the blackboards."⁹⁷ After discussing different types and arrangements of wall writing boards, Nocka calls attention to the need for research and states:

93. Novice G. Fawcett, "Grade Schools - Backbone of An American Community," American School Board Journal, 105:34, August, 1942.

94. Ross L. Neagley, "Children, Teachers and Parents Praise Mount Pleasant's New Functional Schools," American School Board Journal, 118:81, January, 1949.

95. Nocka, op. cit., p. 211.

96. Interview with Dr. W. Theo Dalton, Assistant Professor of Education and Principal of Curry Training School, Woman's College of the University of North Carolina, Greensboro, North Carolina, July 14, 1948.

97. Forbes and Powell, op. cit., p. 35.

Specification for the perfect chalkboard . . . or its equivalent . . . might well be: a device which is

1. Silent to operate.
2. Flexible in use and location.
3. Long lived.
4. Inexpensive in initial operational cost.
5. Free of dust and odor.
6. Low in light absorption.
7. Free from glare.

All these features have been incorporated singly and in groups in various devices but never entirely in one.

Equipment for Dramatic Play and Dramatization

Tompkins declares that dramatic play is important for a child as a means for reliving, interpreting, and trying out life as he sees and understands it. She adds that it "is encouraged by such materials as dolls, playhouse toys, large boxes, boards, and large blocks."

Blocks

As Maurine Bredeson states:

The use of blocks provides physical development, stimulates mental processes and encourages social development . . . Every construction is truly creative and each problem must be worked out to its own solution . . . The social use of blocks progresses through gradual stages to the place where first . . . grade children plan and work together on a structure for the use of all.

98. Nocka, op. cit., p. 214.

99. Helen Tompkins, "Dramatic Play," Leaflet Number 7. Portfolio for Kindergarten Teachers. Washington, D. C.: The Association for Childhood Education, [n. d.] . 1-2.

100. Maurine Bredeson, "Blocks for Building," Leaflet Number 3. Portfolio on Materials for Work and Play. Washington, D. C.: The Association for Childhood Education, [n. d.] . p. 1.

Blocks of many sizes and types may be used. Jerome Leavitt mentions "hollow blocks, square blocks, solid blocks, painted blocks, unpainted blocks, just plain pieces of wood or cardboard boxes and pieces of cardboard."¹⁰¹ Beatty recommends hollow blocks and boards¹⁰² which are a multiple of twelve inches. Bredeson suggests blocks which are multiples of three and one half inches or of four inches.

Discussing the question of securing blocks Bredeson says:

Particularly for blocks which are used for sturdy, relatively permanent structures, the various toy companies and educational supply houses are the most satisfactory source.

An expert local carpenter can make the various pieces according to directions. School manual arts departments and school janitors and custodians may cooperate.

Interested and able parents might make blocks, working either in groups or individually.

A box company can make hollow blocks by nailing covers securely on wooden boxes.¹⁰³

In this work Bredeson also emphasizes the fact that blocks are essentially a 'stage setting' -- a help toward a bigger type of expression, their dramatic play. Toys of different kinds suggest and assist in such dramatic re-enactment. Therefore she recommends that

. . . a suitable place near the blocks should be provided for such accessories as boats, trains, airplanes, cars, large sheets of cardboard, spools, sticks, for which open shelves seem the most usable storage space.¹⁰⁴

¹⁰¹ Jerome Leavitt, "Materials and Tools for Woodworking," Childhood Education, 24:370, April, 1948.

¹⁰² Beatty, op. cit., p. 330.

¹⁰³ Bredeson, op. cit., pp. 1-2.

¹⁰⁴ Ibid., p. 1.

A Playhouse

See Plates 9 and 12. An alcove for doll play may be formed by the use of movable cabinets or of long, narrow folding shelves or tables, hinged to the wall so that they (See Plate 31 C.) can be pulled down to outline or cut off part of the room. These tables may also be used for work or display space and folded back against or into the wall when not in use. A playhouse may be built from blocks, boxes, or boards, or screens may be used to form the house. Screens of the hinged type (See Plate 31 D.) will make a very satisfactory three-sided house, or a screen with four parts hinged together may be constructed. A separate screen may be used to form one side, if desired. If windows are cut in the screen, the piece which was cut out may be divided in half and hinged to the opening on each side to form blinds. Then when the screen is to serve as a bulletin board, the "blinds" will close the opening.

The Elmont, Long Island, teachers listed the following components of a doll corner:

. . . doll or dolls, a doll bed, a doll carriage, dishes, cupboard, small table that children can sit at, rocker, chairs, toy victrola, iron, ironing board, wash tub, and washboard.¹⁰⁶

Children may wish to add other things, such as a stove, refrigerator, lamp, telephone, and perhaps a piano.

105. N. L. Engelhardt, "For City School Neighborhoods — Planning School Building Programs," American School Board Journal, 114:37, January, 1947.

106. Beard and others, op. cit., p. 208.

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105. N. L. Engelhardt, "For City School Neighborhoods — Planning School Building Programs," American School Board Journal, 114:37, January, 1947.

106. Beard and others, op. cit., p. 208.

Other Equipment for Dramatic Play and Dramatization

A trunk or cabinet filled with long dresses, hats, gloves, pocket-books, and other odds and ends in which children can dress-up may encourage dramatic play. This trunk may also serve as a costume box and hold pieces of crepe paper, ribbon, strips of cloth, and masks of different kinds to aid in dramatization.

The platform makes a good stage with the addition of screens for background and curtains. If large pieces of paper are fastened to the screens, stage settings may be painted on them. Stage furniture may be borrowed from the playhouse or other parts of the room or built with large blocks.

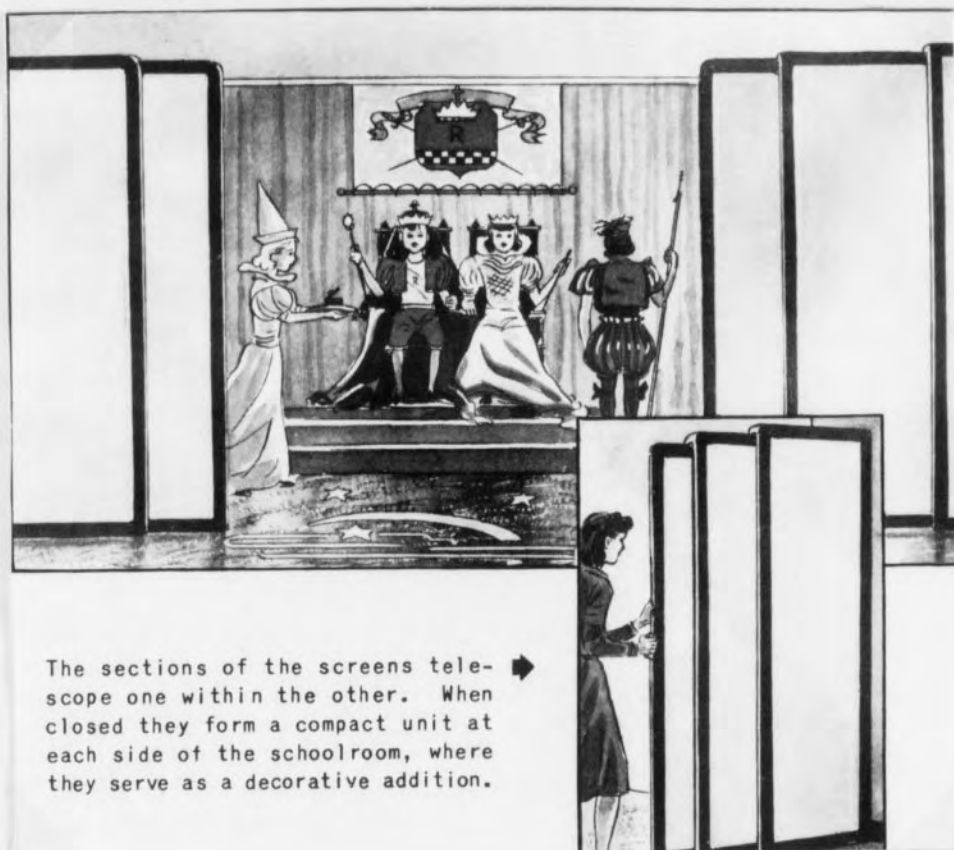
Also, telescoping screens which help to form a stage are described in Ideas for an Up-to-date Schoolroom. See Plate 32.

Located on either side of the . . . room [they] can be opened to make a semi-partition [forming alcoves for work area, library, or other special interests]. . . When [the] screens are fully extended they readily convert this end of the classroom into a practical stage.¹⁰⁷

E. E. Lewis mentions screens covered with wall board or burlap and says that if the "upper half of one part [is] left open, the screen¹⁰⁸ may be used for presenting original puppet shows." If hinged screens are used to make the playhouse and a window is cut in one of the screens, this opening will make a good place for viewing puppet shows. The blinds, if they are hinged to the sides of the opening, will make good stage curtains, or they may be fastened out of the way and cloth curtains

107. "Ideas for an Up-to-date Schoolroom." p. 7

108. Lewis, op. cit., p. 29.



The sections of the screens telescope one within the other. When closed they form a compact unit at each side of the schoolroom, where they serve as a decorative addition. ➡

★

*Picture from Ideas for an Up-to-date Schoolroom, by Armstrong Cork Company in collaboration with representatives of the National Education Association.

PLATE 32
TELESCOPING SCREENS

hung so that they can be pulled back or raised.

The Library and Reading Area

The arrangement of the balcony for a classroom library has been shown. See Plate 9. The platform may be used for this purpose and its arrangement is also shown. See Plate 13. Instead, an alcove may be formed by using on the side nearer the windows, the movable open-faced bookcases or folding utility tables described earlier. A round table to be used for the display of books or as a reading table, a magazine rack, (See Plate 33.), a window seat or easy chairs, and a bulletin board may add to the interest and attractiveness of the library nook for individual reading or a story hour. Chart racks also will be convenient to hold the experience charts so important in first grade. One easy means of making such a chart or reading rack is to use a pole with
109
clothes pins to hold charts securely. This library alcove may be used at times for group reading. More often the reading circle will be at the front of the room near the writing board. Finally, Croad describes a

portable reading materials cabinet [which] can be moved to any part of the room where group work is to be carried on. The top drawer is arranged to contain charts and the lower shelf¹¹⁰ has a door which lets down with steel pieces to hold it even.

A Game and Toy Table

Puzzles, lotto, animal lotto, chinese checkers, common checkers, jack straws, and other games, A B C blocks, Lincoln logs, a little car,

109. Interview with Dr. W. Theo Dalton, July 14, 1948.

110. Croad, op. cit., p. 36.



(Scene at Buie's Creek, North
Carolina)

PLATE 33
A MAGAZINE RACK

airplanes, boats, trains, toy work machines, toy farm animals, construction toys, dolls and housekeeping equipment, old magazines, scissors, and a printing outfit -- all help to "provide a natural environment¹¹¹ and add to the interesting appearance of the schoolroom." Located on a table or shelves in the work area, they will invite children's attention during independent work periods. A wide assortment of toys may be bought from one of the companies which sells educational toys. If desired, the necessary toys may be gathered instead from local sources: department or dime store, printing shop, or art store, pennant shops,¹¹² dressmakers, drug store, grocery store or seed store. These toys may be stored in some of the cabinets or open shelves already described. See Plates 9, 26, and 30. Or low movable shelves may be constructed for them and used to mark off some of the special centers. See Plate 14.

The Science Center

Natural science is an important area of learning for the young child. Loyola Hughes, Training Teacher in the Elementary School, Milwaukee State Teachers College, says:

Curiosity in the young child is an inherent and driving force which causes him to explore and investigate this new and moving world in which he lives . . .

The school should utilize these natural and compelling interests. It should provide an environment that will give opportunity for real experiences with real things. This will mean . . . a place

111. Lewis, op. cit., p. 29.

112. Edwina Fallis, "Toys for Indoor and Outdoor Play." Leaflet Number 4. Portfolio on Materials for Work and Play. Washington, D. C.: The Association for Childhood Education, [n. d.] . pp. 1-2.

113
for science interests . . .

Pet Pens

There must in addition be arrangements for bringing animals, plants, and natural objects of all kinds into the school room for observation, care, and the experimentation through which the child may find the answers to many of his questions.

David W. Russell states that "living animals are a part of the child's own world; getting acquainted with them at first hand, their characteristics and habits, is enriching experience." In making a similar point V. R. Keebler describes a small boy who had been allowed no pet at home. She traces his growth in a sense of responsibility and in an attitude of kindness toward the pet, when he had a part in caring for one at school. Grace Curry also recommends live pets in the school room. She declares:

Children develop a sense of responsibility when they assume the care of pets . . . They learn many interesting facts from close daily observation. Becoming acquainted with animals creates an interest and love for them.

Small and larger pet cages and the aquarium and terrarium are among the important science equipment. Acceptable cages may be made by small children by "stretching window screening, wire mesh, or chicken

113. Loyola Hughes, "Physical Science in the Elementary School." Science and the Young Child. Bulletin. Washington, D. C.: The Association for Childhood Education, 1936. p. 14.

114. David W. Russell, Suggestions for the Care of Pets in the Classroom. New York: Scott, Foresman [n. d.] . p. 2.

115. V. R. Keebler, "Life Begins at Eight Fifty-five," American Childhood, 23:24-25, June, 1938.

116. Grace Curry, "Shall We Use Live Pets in the Science Room?" School Science and Mathematics, 47:302, April, 1947.

wire over a frame of the right size. An opening must be provided to
 117
 make cleaning possible." Margaret S. Millar mentions "a screen wire
 118
 cage for visiting insects and small animals." McAndrew gives direc-
 tions for making an insect cage from two cake tins and a length of
 119
 screen wire.

Russell suggests that a nest for ants "can be made easily or
 purchased." He describes a "window-glass observatory" constructed of
 120
 "two pieces of window-glass" and "wood or glass" to separate them.
 Margaretta Harmon gives more detailed directions for making a similar
 121
 type nest. Russell also suggests, as an alternative, a "tumbler
 observatory" which is simply "a tumbler half full of 'ants' nest' and
 as many ants from the colony as possible," with a dark cloth wrapped
 122
 around it. The tumbler should be set in a saucer of water.

An apple box or an orange crate with a wire covering all open-
 ings will make a satisfactory cage for small animals. For larger

117. Grace Curry, "Care of Pets in the Elementary Science Class-
 room," School Science and Mathematics, 47:680, November, 1947.

118. Millar, op. cit., p. 352.

119. Mary E. McAndrew, "Materials for Science," Leaflet Number
 10. Portfolio on Materials for Work and Play. Washington, D. C.:
 The Association for Childhood Education, [n. d.] . p. 2

120. Russell, op. cit., pp. 3-4.

121. Margaretta Harmon, "Ants for Classroom Pets," American Child-
 hood, 32:59, June, 1947.

122. Russell, op. cit., p. 4.

animals an outgrown child's play pen will supply a good frame for a
¹²³
 cage. If it is a folding pen, its storage will be less of a problem.
 See Plate 34. If screen or other small-mesh wire is fastened to the
 inside of a folding pen, it will hold visiting pets, and when not in
 use, it can be folded to require very little storage space. Curry
 adds that a "removable metal tray facilitates the cleaning" of any of
 these cages, and "glass or porcelain food containers ¹²⁴ are good because
 they are easily washed."

A variety of cages and "runs" of different sizes were made by
 the high school boys for the science laboratory at Erwin, North Carolina.
 A slanted turtle run (See Plate 34.) and a three-lane guinea-pig run
 (See Plate 34.) give these animals space for plenty of exercise. Such
 cages, or runs, are too large, perhaps, to be used in the first-grade
 classroom under consideration. A small pen about the size of an apple
 box (See Plate 35.) is convenient for very small animals. A larger
 pen, almost three feet square (See Plate 35.) is sturdy enough and gives
 sufficient room for many kinds of pet visitors.

The Aquarium

The aquarium may be a square or oval jar or bowl, or it may be
 an oblong container of whatever size is desired. However, the larger
 the aquarium, the more water plants, fish, water animals, and insects
 it will house successfully.

123. Interview with Dr. Franklin H. McNutt, July 8, 1948.

124. Curry, "Care of Pets in the Elementary Science Classroom,"
 pp. 681-682.

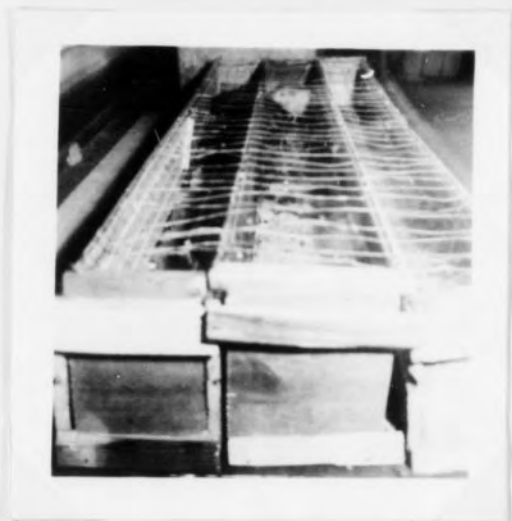


(Pictures taken at home of a Child)

A Child's Play Pen
Will Make A Good Pet Cage



Folded, It Will Be
Easily Stored



A Three Lane
Guinea Pig Run



A Slanted Turtle Run

(Scenes in High School Science Laboratory at Erwin, North Carolina)

PLATE 34

PENS OR CAGES FOR PET VISITORS



A Cage
For Small
Animals

(Scene at Erwin, North Carolina)



An
Aquarium

(Scene at Erwin,
North Carolina)



(Scene at Curry School
Greensboro, North Carolina)

A Pen for Larger Animals



(Scene at Lowes Grove, North Carolina)
Plants and Rock Pool

PLATE 35
MORE HOMES FOR
ANIMALS AND PLANTS

Sister M. Dorothy Browne describes an aquarium made from a four-gallon can:

125
Panels are cut out of five sides, leaving the bottom intact and a one-inch border around each of the other sides. Glass is fitted into the four vertical sides and is held in place by a mixture of lithrage and glycerine . . . The metal is painted light green . . .

126
An interesting aquarium (See Plate 35) was found in a second grade classroom at Erwin, North Carolina. The container was glass, bound with metal, and was large enough to make room for sea weed and shells, a small turtle and gold fish.

The Terrarium

Plants may be grown in a terrarium, in a window box, or in pots on an extra wide window sill, a shelf in front of the windows, or a table near the windows. W. R. Greeley describes an "entire window-wall . . . [which was] a long bay, filled with glass, and provided with a continuous pebble-filled trough under the windows . . . [where] teachers and pupils have since maintained 'gardens' of potted plants and climbing vines."
127

At Lowes Grove, North Carolina, the plants were growing vigorously on a table. See Plate 35. An old sand table was filled with garden soil, a shallow pool was formed in the center by burying a pan

125. Sister M. Dorothy Browne, Standards of Classroom Equipment for the Primary Grades. Master's Thesis, Washington, D. C.: The Catholic University of America, 1936, p. 41.

126. Interview with Miss Eleanor Kincahon, Erwin, North Carolina. October 18, 1948.

127. W. R. Greeley, "The Architect Looks at Schoolrooms," American School Board Journal, 104:46, January, 1942.

of water in the dirt at the center of the table. Rocks covering the bottom of the pan gave the appearance of a rock pool in which gold-
 128
 fish, tadpoles, and other water animals were living.

Display Space for the Science Center

The science center also needs display space for interesting objects brought into the room: "acorns, seeds, flowers, leaves, rocks, birds' nests, . . . shells, nuts, [mounted] insects, quills, bark, bones,
 129
 cotton, wool, fungus growth, gourds." If added storage or display space is needed, low, movable cabinets may be constructed (See Plates 3, 12, 13 and 14.) and used for a science museum to help cut off the science alcove from the main room. A narrow, glass shelf may be fastened to the windows about twelve inches from the bottom to furnish display space for some small objects. If other tackboard space is needed, screens may be used as bulletin boards for the science center. See Plate 31.

The Music Center

Beatrice Landeck discusses the young child's enjoyment of music and his experiences with sound and rhythm before he enters school. Then she says:

128. Interview with Mrs. J. R. Auman, first grade teacher, Lowes Grove, North Carolina. April 23, 1949.

129. "Suggested List of Science Activities for Young Children." Science and the Young Child. Bulletin, Washington, D. C.: The Association for Childhood Education, 1936. p. 23.

What a challenge to teachers . . .! Theirs is the pleasurable task of helping the child transform the unrelated sounds of his whole environment into musical expression through his voice, his body, and his mind. ¹³⁰

Helen Christianson calls attention to the way in which

the teacher seeks by environmental arrangement, by observation and guidance to see that music in some of its many, varied forms contributes to the satisfaction and enjoyment of every child and that it opens up new avenues of expression. ¹³¹

The music program includes singing, rhythmic activity, experimentation with instruments, listening activities, and creative experiences. A good piano is useful in every phase of this program.

Swanson and Hosler describe "a very small three and a half octave piano ¹³² mounted on bent steel tubing similar to the chairs and tables" of stainless steel already described. If the piano is mounted on steel tubing or fitted with gliders or rollers it will be movable.

Sheehy declares that "a good portable phonograph is a must," and many other writers include the phonograph in their lists of most desirable equipment. The phonograph can be used for listening activities, and rhythmical interpretation. There are also a number of good records of singing games and of childrens' songs which young children enjoy. Sheehy also mentions a number of other instruments: drums, gongs, triangles, resonator blocks, a xylophone, harmonicas, and a

130. Beatrice Landeck, "Music With the Twos to Nines," Children and Music. Bulletin, Washington, D. C.: The Association for Childhood Education, 1948. p. 11.

131. Helen Christianson, "Producers or Consumers: Which Shall We Foster?" Children and Music. Bulletin, Washington, D. C.: The Association for Childhood Education, 1948. p. 6.

132. Swanson and Hosler, op. cit., p. 57.

133

134

"set of five Korean wooden temple bells." Misner adds Tonettes to this list. Mursell includes marimbas. He also stresses the importance of good equipment so that children may "experience music presented in a

135

really beautiful tonal medium," and Landeck states:

Instruments that have good tone quality are essential if the best results are expected . . . It is far better to provide a few instruments with varying and distinctive characteristics: a half-dozen pairs of home-made doweling sticks which make a sharp, clicking sound, clear, tinkling bells; and a single pair of cymbals which have a fine metallic resonance that slowly dies off, leaving a thin thread of sound.¹³⁶

Many of the musical and rhythm instruments may be made by the children and teacher. Winifred J. Daniels says:

Many schools are not in a position to purchase enough of the commercial instruments and some schools prefer to give children the added experience of making instruments.¹³⁷

A tom-tom may be made by stretching an inner tube over a wooden mixing bowl, and yarn wrapped tightly around the ends of sticks makes

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good beaters. For the making of drums, Christianson recommends "good-sized kegs, large wooden buckets, chopping bowls, and old-fashioned

139

brass jardinieres. Daniels describes methods for making a number of

133. Emma Dickson Sheehy, "Let Them Make Music," Childhood Education, 24:352-4, April, 1948.

134. P. J. Misner, "Activity Programs Make New Demands on Elementary Schools," Nation's Schools, 33:43, March, 1944.

135. James L. Mursell, "Music for Children," Children and Music, Bulletin, Washington, D. C.: The Association for Childhood Education, 1948, pp. 4-5.

136. Landeck, op. cit., p. 19.

137. Winifred J. Daniels, "Instruments for Music Making," Leaflet Number 8, Portfolio on Materials for Work and Play. Washington, D. C.: The Association for Childhood Education, [n. d.] . p. 1.

138. Interview with Miss Ethel Martus, June 23, 1949.

139. Christianson, op. cit., p. 7.

instruments: drums, rattles, rhythm sticks, castinets, tambourines,¹⁴⁰
 cymbals, horse-shoe "triangles," chimes, and marimbas and xylophones.¹⁴¹
 Mursell suggests "stretched strings," and Sheehy mentions "tuned water
 glasses arranged on a felt-bottomed tray . . . bottles suspended on a
 stand, [and] sandpaper blocks (home made)."¹⁴² If the stand to hold the
 tuned glasses, the suspended bottles, or the brass rods is high enough
 to cause the child to look up and reach out or up when playing them,
 the use of these instruments will help to counteract the stooped-
 shouldered position in which so much school work is done.

Daniels presents the following criteria for the instruments to
 be used in making music:

All instruments, commercial and homemade, should be sturdy;
 safe -- no sharp edges or corners; as musical as possible.
 Percussion instruments should be resonant, not too loud.¹⁴³
 Tuned instruments should be accurately tuned to scale.

Storage space for musical instruments, and storage and display
 space for music books and pictures may be supplied by built-in or
 movable cabinets. However, if these cabinets are movable, it will be
 easy to change the music center to another part of the room if such a
 rearrangement seems desirable. Such cabinets may be placed near the
 windows and the piano. See Plates 2, 6, and 14.

140. Daniels, op. cit., p. 2.

141. Mursell, op. cit., p. 4.

142. Sheehy, op. cit., p. 356.

143. Daniels, op. cit., p. 3.

Audio-Visual Aids

"As soon as the child enters the world . . . his education begins with the actual contact with objects."¹⁴⁴ When he comes to school, there is a tendency to depend more on words. However, children "enjoy and benefit from verbal teaching and learning only if they already have had perceptual experiences that make the words meaningful."¹⁴⁵ Those materials and that equipment which are used in an effort to add to the child's perceptual experiences are grouped under the term, "audio-visual."

A Variety of Audio-Visual Aids

Audio-visual aids include:

1. The excursion (Field trip, school journey).
2. Realia (Objects, specimens, models, museums).
3. Dramatizations and demonstrations.
4. Television.
5. Sound motion pictures.
6. Silent motion pictures.
7. "Stills" (Photographs and other "flats," either printed or projected).
8. Sound reproductions (Radios, phonographs, central sound systems, transcriptions).
9. Graphic aids (Maps, charts, graphs, etc.).¹⁴⁶

Accordingly a globe is suggested as a graphic aid for first grade children. "The twelve-inch cradle type of globe is particularly recommended . . . to develop two understandings: that it is a representation of the

144. Paul C. Reed, "What Do We Mean by Audio-Visual Materials?" Using Audio-Visual Materials With Children. Bulletin. Washington, D. C.: The Association for Childhood Education, 1947. p. 7.

145. Stephen M. Corey, "Values and Hazards in Using Audio-Visual Materials." Using Audio-Visual Materials With Children. Bulletin. Washington, D. C.: The Association for Childhood Education, 1947. p. 9.

146. North Carolina Division of Instructional Service, Handbook for Elementary and Secondary Schools. Publication No. 255. Raleigh, North Carolina: State Superintendent of Public Instruction, 1947. p. 103.

earth and that the earth is round, almost like a ball."¹⁴⁷

Many opportunities for first hand experiences and for dramatic play will be supplied by the centers of interest and the equipment already described. Much of the material needed will be collected by the children or the teacher from their surroundings. Storage and display space have been suggested for the pictures, books, specimens, models, maps, globe, graphs, the museum, and any objects related to the dramatic play or children's projects.

Equipment for Darkening the Room

It will be necessary in addition to darken the room before still and motion picture projectors or the opaque projector can be used.

Irvine H. Millgate and O. H. Coelln, Jr. say that "experience has proved that student concentration on the screen increases as the room becomes darker."¹⁴⁸ "A dark room is essential for good projection with the opaque projector."¹⁴⁹ Consequently the North Carolina Handbook for Elementary and Secondary Schools states:

Curtains or drapes are perhaps the most satisfactory means of

147. Mary Ellen Gibbs, Anticipatory Experiences Leading to Competence With Formal Maps. Unpublished Master's Thesis, Woman's College of the University of North Carolina, Greensboro, North Carolina, 1948. p. 44.

148. Irvine H. Millgate and O. H. Coelln, Jr., "Standards for Visual and Auditory Facilities In New Educational Buildings," The American School and University, Eighteenth Annual Edition, New York: American School Publishing Corporation, 1946. p. 136.

149. Alice W. Holland and Paul W. Novello, "Opaque Projector Units for Schools," School Executive, 66:44, May, 1947.

darkening a room for projection. Denim . . . is sufficiently opaque for use. It is comparatively sunfast and inexpensive. The most economical installation is on a single overhead track on the ceiling about six inches out from the windows. . . The two pieces should meet between window spaces. When not in use the sections are pulled back into the corners in loose folds where they are out of the way.

Blackout roller shades may be used provided they are installed with wood or metal channels to prevent light leakage around the edges. ¹⁵⁰

Millgate and Coelln agree that

if drapes are used and there is no provision for ventilation except through the open windows, it will be necessary to hang the drapes 6" from the wall to allow circulation around them during the period in which the room is in semi-darkness. [They add that] roller shades and blackout shields require either window grills or a circulation system since they shut the passage of air through the open windows. Venetian blinds will allow for passage of air between the slats for short periods of time. They have the disadvantage of being expensive to install and maintain. Unless they are installed above the glass area in a recess, they will cover part of the area at all times which will effect circulation and light entry when not in use as a part of the darkening equipment.

They also suggest that

If a room is in comparative total darkness, a halo of dim light from a source behind the screen will relieve the eye strain resulting from the brightness ratio between the screen area and its surroundings. ¹⁵¹

Other Equipment for Use With Projectors

Classroom projectors and other electrically operated machines make it necessary to have convenient electrical outlets. Where electrical outlets have not been provided in sufficient number, it will be necessary to use extension cords, although elimination of cables running on top of the floor is desirable.

¹⁵⁰. North Carolina Division of Instructional Service, op. cit. p. 107.

¹⁵¹. Millgate and Coelln, op. cit., pp. 136-39.

For a screen, Millgate and Coelln recommend one that is "mounted
152
in a roller case on wall brackets and is pulled down when needed."

Tool Subjects

A rich program of construction, dramatic play, and first hand experiences with things which can be brought into the school room, or visited outside it, offers the best opportunities for use of the language arts and number work. Measuring, counting, and reading and writing numbers are a natural part of construction and dramatic play. Talking, reading, and writing about their plans, the things they do, and what they find out gives children plenty of interesting practice in the use of these tools.

Physical Education

V. E. Stansbury states that "if strong healthy bodies are to be developed there must be . . . facilities for both an indoor and outdoor
153
physical education program." Space for the whole group to engage in

active play and a "game basket," containing such equipment as large balls and ropes, are the two things most necessary to the physical
154
education program. G. Darwin Peavy recommends that "throwing, catch-

ing, and bouncing balls, running, jumping, skipping, hopping, [such games as] "Follow the Leader," "Can you?," "Do this." finger plays,

152. Ibid., p. 141.

153. V. E. Stansbury, "Carroll Completes Building Program," American School Board Journal, 105:33, September, 1942.

154. Interview with Miss Ethel Martus, June 23, 1949.

nursery games, singing games, free rhythms, [and] dramatic play"¹⁵⁵
 make up the physical education program for primary children. When children are dressed properly, they can usually benefit from outdoor play. At the few times when the weather keeps them indoors, the same types of activity may be used in the room if enough floor space can be cleared by pushing back tables and other room furniture. If such furniture is supplied with gliders or rollers so that children can move it easily enough, this activity of moving furniture to clear floor space for their games will, in itself, furnish good exercise for children.¹⁵⁶
 A phonograph and a tom-tom will be useful for rhythmical and dramatic play.

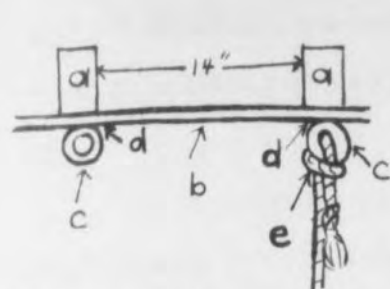
Indoor Equipment for Exercise

Some less mature children and others who are especially active will feel the need for an extra amount of exercise. Every child may benefit by added exercise of a type which causes him to look and reach up, instead of looking down and bending over as he does in so much of his work in school. P. J. Misner mentions "rope climbing . . . [and] traveling on rings."¹⁵⁷ If rings are dropped by strong ropes from the ceiling, larger exercise rings, swinging bars, ropes to climb, rope-ladders, or low swings (See Plate 36.) may be hooked into them. Since

155. G. Darwin Peavy, "A Program for Primary Physical Education," American Childhood, 27:39 November, 1941.

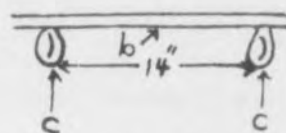
156. Interview with Miss Ethel Martus, June 23, 1949.

157. P. J. Misner, "Activity Programs Make New Demands on Elementary Schools," Nation's Schools, 33:43, March, 1944.



Distance Between Rafters

- Key
- a - Rafter
 - b - Ceiling
 - c - Ring Fastened to Head of a Large Wood Screw
 - d - Screw in Rafter
 - e - Rope Tied in Ring



Distance Between A Pair of Screw Rings

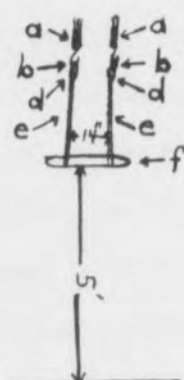
Means of Attaching Ropes to Ceiling



Large Exercise Ring



Small Ring for Attaching Ropes or Chains



Swinging Bar (high)



Rope For Climbing

- Key
- a - Strong Rope or Chain
 - b - Hook
 - c - Large Exercise Ring
 - d - Small Ring (Can easily be hung on hook)
 - e - Rope or Chain Fastened to Small Ring
 - f - Swinging Bar
 - g - Rope for Climbing
 - h - Rope Ladder
 - i - Swing Seat
 - j - Stationary Steel Bar or Pipe
 - k - Large Wood Screws



Rope Ladder



Low Swing



Stationary Bar For Climbing And Climbing

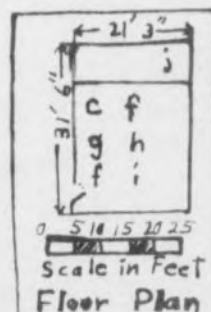


PLATE 36

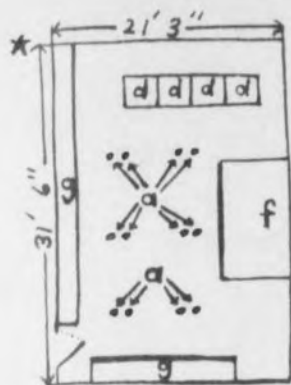
INDOOR EQUIPMENT FOR EXERCISE

only one child can use each of these pieces of equipment at a time, children and teacher must, in the beginning, plan together for their safe use.

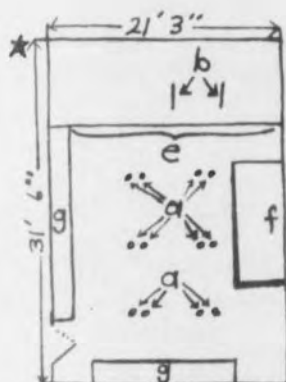
As first grade children are so much lighter than the boys and girls in high school, they will not require as heavy equipment. If large wood-screws, made with a ring fastened to the head are placed where they will screw into the rafters, heavy ropes may be tied in these rings. Rafters may be fourteen inches apart. If the ropes are suspended in pairs (See Plate 37.), they will be convenient for attaching the rope ladder, swinging bar, swing, and rope for climbing. If one of a pair is not needed, as when the large exercise ring and rope for climbing are used, these extra ropes may be hung on hooks at the sides of the room where they will be out of the way. See Plate 37 C. When none of this equipment is being used, the hooks at the sides of the room will hold all the ropes. Whenever space is not needed for other purposes therefore, a child may swing from the large ring or bar, or in the low swing, or climb the rope or the ladder. Other children will be busy in other parts of the room. See Plate 38.

Furthermore, a stationary bar of bent steel tubing may be fastened either to the under part of the balcony, directly above the work space or to the ceiling of the room above the balcony. See Plates 36 and 37. These stationary bars may be used also whenever their use will not interfere with other activities. See Plate 38.

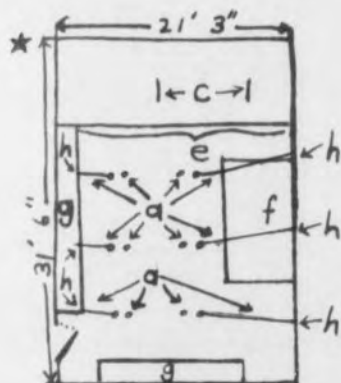
158. Interview with C. D. Baggett, seventh grade teacher at Erwin, North Carolina. May 16, 1950.



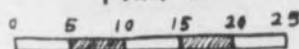
Plan A



Plan B



Plan C

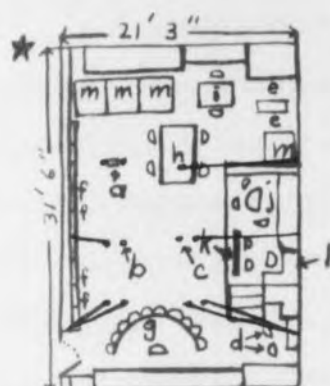


Scale in Feet

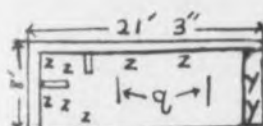
Key

- a- Strong Rope or Chain Suspended From Ceiling (*Indicated by red dot or line [-])
- b- Stationary Steel Bars or Pipes Fastened to Underside of Balcony
- c- Stationary Steel Bars or Pipes Fastened to Ceiling Above Balcony
- d- Movable Cabinets (Plan A shows these cabinets moved back out of the way of exercise equipment.)
- e- Glass Partition Between Work Space and Main Room (Plan B shows a room with a glass partition.)
- f- Platform in Front of Windows
- g- Cabinets
- h- Hooks to Hold the Ropes or Chains Which Were Suspended From the Ceiling (Plan C shows one of each pair of ropes caught up on hooks at the sides of the room so that they will be out of the way when not in use. Both ropes in each pair are hung on these hooks when they are not in use.)

PLATE 37
LOCATION OF
INDOOR EQUIPMENT FOR EXERCISE



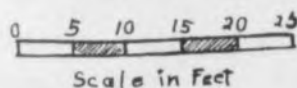
Quiet Activities
Partial Use of
Exercise Equipment



Balcony



Full Use of
Exercise Equipment
And Other Activities

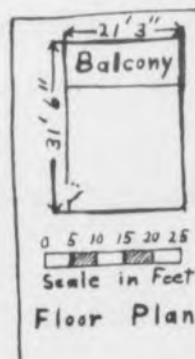


Scale in Feet

Key

- a-Swing
- b-Rope for Climbing
- c-Large Exercise Ring
- d-Children Enjoying Music Books
- e-Children Painting at Double Easel
- f-Children Painting at Removable Easels
- g-Reading Circle
- h-Game Table
- i-Clay Table
- j-Library Table Near Window Seat
- k-Screen Bulletin Board
- l-Book Shelves
- m-Movable Cabinets Pushed Back Out of the Way
- n-Swinging Steel Bar or Pipe
- o-Rope Ladder
- p-Stationary Bar or Pipe Fastened to Underside of Balcony
- q-Stationary Bar or Pipe Fastened to Ceiling Above Balcony
- r-Carpenters Bench
- s-Pet Pen
- t-Aquarium
- u-Child Reading Bulletin Board
- v-Tom-tom on High Stool
- w-Marimba on High Stand
- x-Children Marching
- y-Children on Window Seat
- z-Children Engaged in Doll and Block Play

*Red line (—) indicates strong rope or chain suspended from ceiling and caught up on hooks at sides of room out of way when not in use.



0 5 10 15 20 25
Scale in Feet

Floor Plan

PLATE 38

ROOM ARRANGED FOR INDOOR EXERCISE
AND OTHER GROUP ACTIVITIES

Equipment For The Rest Period

The rest period is a very important part of the first grade program. Some arrangement must be made so that children can stretch out and really learn to relax. Neterer and Ewen declare that "Growing children require a great amount of muscular activity and vivid experience which must be balanced with . . . conscious relaxation . . ."

159

They suggest that "low cots provide the best rest." Elizabeth W. Campbell describes "three-decker bunks" created from the shelves of a huge costume closet for a group of kindergarten children. Margaret Miller tells about platforms built for resting in a school where

160

161

lumber is plentiful and can be had reasonably. . . One or more platforms [were built with] one side wood and the other celotex or soft wood, with an air space between. [They are] hinged to the wall near the floor and lifted by means of small pulleys. When lifted and secured against the wall [they are] used as bulletin boards . . . [The platforms] provide a clean surface, less cold than the floor, on which children may rest, work, and play games.

Cots require more space for storage, and platforms, and bunks, more unused wall space than can be found in a room of the size under consideration. Mats of some kind to use on the floor seem to offer the best solution. Celotex is a good insulating material and is not too expensive. It can be cut in pieces four feet long and two feet wide, padded with a rug, blanket, bath mat, or sack and covered with plastic or

159. "The Kindergarten Rest Period," Leaflet Number 9. Portfolio for Kindergarten Teachers. Washington, D. C.: The Association for Childhood Education, [n. d.] pp. 1-2.

160. Elizabeth W. Campbell, "Bunks Aid Good Resting," Childhood Education, 24: 374, April, 1948.

161. Millar, op. cit., pp. 352-53.

162. Interview with Dr. Franklin H. McNutt, June 23, 1948.

paper to keep the padding clean. The edges may be bound with heavy, brown, four-inch-wide paper tape (which can be bought in rolls backed with mucilage ready to use). Such mats furnish a place where children can relax and rest comfortably. See Plate 39. Later these may be easily stored in chests or bins requiring a comparatively small space.

Rubatex mats, already described, are most satisfactory but more expensive. Rugs, bath mats, blankets or quilts, or a sack, with a large sheet of paper tacked onto the back, may be folded lengthwise and rolled for storage. Many thicknesses of paper or heavy paper folded over and
163
quilted make usable mats. Such materials lack the insulating qualities of celotex and are less durable. If nested tables have been used and all furniture in the room is movable so that it can be pushed back to leave a large clear space in the main part of the room, enough mats to accommodate thirty-five children may be laid in rows with narrow spaces between. If the room has a balcony, some of the children may rest there. See Plate 40.

A Clock

The literature suggests a clock in each room. "Mounted at child
164
height," a clock gives the children a chance to "learn to tell time and
165
to live by the clock just as people do in out-of-school life."

163. Interview with Miss Ruth Lee, first grade teacher in Curry Training School, Woman's College of the University of North Carolina, Greensboro, North Carolina, July 14, 1948.

164. "Building Types; the Neighborhood School Reference Studies on Design and Planning." Architectural Record, 88:101, October, 1940.

165. Eloise C. Keebler, "Making Social Studies Come Alive," Childhood Education, 24:349, April, 1948.



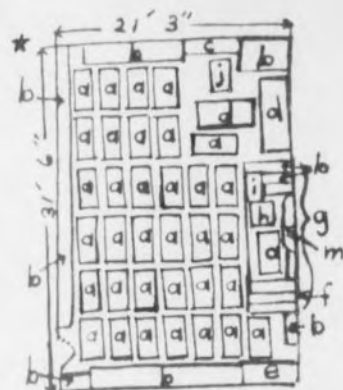
Showing Detail of Mat
Padded with Blanket and Bound with Paper Tape



(Scenes at Erwin, North Carolina)

Child Resting on Mat

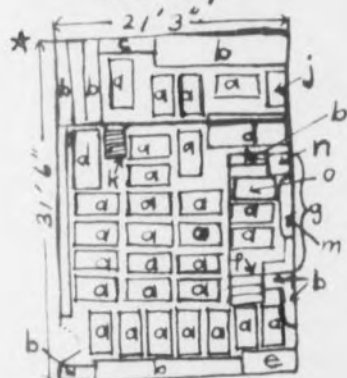
PLATE 39
CELOTEX MATS FOR RESTING



Showing Room
Without Balcony



Balcony



Showing Room
With Balcony

Key

a- Mats for Resting. (★ Red Outline []
Marks Each Mat.)

b- Cabinets

c- Sink

d- Nested Tables

e- Piano

f- Steps to Platform

g- Platform

h- Doll Table

i- Doll Bed

j- Double Easel

k- Ladder to Balcony

l- Round Library Table

m- Window Seat

n- Aquarium

o- Table for Growing Plants

★ Mats Are Each
Six Inches Apart

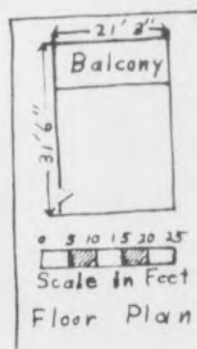
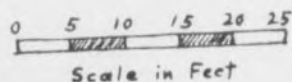


PLATE 40
MATS ARRANGED FOR RESTING

Pictures

Describing a new school building planned for Miami Beach, Florida, an article in the American School Board Journal for April, 1948, states that "wall space is left for the hanging of two large pictures, at the front of the room . . ." ¹⁶⁶ Wall space at the ends of the blackboard or on each side of the windows may be used for large framed pictures. Panels between groups of windows may offer space for a picture if the space is wide enough. If no wall space is available, a screen may be reserved for a well-chosen picture. Lewis recommends "a few pictures, if well chosen and carefully used," and also suggests "picture frames with removable backs" ¹⁶⁷ for supplementary pictures.

Additional Equipment for Health

Equipment has been suggested to aid in developing an active, varied, interesting program, to encourage order and cleanliness, and to provide for proper exercise, and rest. Two other suggestions relating to the child's health were found in the literature. Eloise C. Keebler ¹⁶⁸ recommends a "first-aid kit." Thomas Higgins states that "ultra violet ray lamps for the destruction of air-borne bacteria are now being manufactured. They are inexpensive and will be more used." ¹⁶⁹

Summary

Space may be created for an active, varied program of living

166. "Miami Completes First Postwar Building," American School Board Journal, 116:42, April, 1948.

167. Lewis, op. cit., p. 29.

168. Eloise C. Keebler, op. cit., p. 348.

169. Thomas Higgins, "Mechanical Equipment for the School," Architectural Record, 95:89, March, 1944.

even in a room twenty-one and a fourth feet wide and thirty-one and a half feet long, if furniture is fitted with gliders or rollers to make it movable, if tables and chairs are of a type which may be nested, and if a balcony is built over the back of the room. Storage space for such a program may be furnished in built-in or movable cabinets along each wall and low movable cabinets or open shelves to mark off alcoves. Display and writing boards may be placed on the cabinet doors or be of the swinging type. A glass partition to separate the work space from the main part of the room, a platform in front of the windows, and removable shelves, linoleum-covered table space, a folding pen for pets, and inexpensive smaller equipment encourage a variety of special interests and creative effort in music, painting, modeling, construction, other handicrafts, the language arts, and dramatic play.

Finally, three other means are suggested to facilitate the practice of good health habits. First, a sink or wash bowl, adequate electrical outlets, hot plates, cooking utensils and dishes, together with storage space to supply them, help to make it possible for the teacher to encourage the eating of good food. Second, strong ropes or chains suspended from the ceiling with swings, steel bars, large rings, rope ladders, and other equipment of the same type provide for additional exercise. Third, mats on a celotex base or rubatex mats give each child a chance to stretch out for resting. Their storage requires a comparatively small space.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

Summary

The purpose of this study is to suggest desirable equipment related to available space in typical first grade classrooms in North Carolina Schools. In pursuing this theme, it was necessary to answer the following questions:

- I. What space is available?
- II. What equipment is desirable?
- III. How may the problem of space and equipment be resolved?

A survey was made to discover what space is available. Questionnaires were sent to all county and city superintendents in North Carolina to determine the average size of first grade classrooms and the average first grade enrollment in the state. The dimensions of a typical grade as revealed by this study show that the room is twenty-one and a fourth feet wide and thirty-one and a half feet long. The average enrollment for first grade in the state of North Carolina is thirty-five children for each room.

The following steps were taken to find out what equipment is desirable:

1. The educational aim was stated and the program in first grade was described.
2. Equipment in outstanding schools was observed.
3. Successful educators and experts on building and equipment were interviewed.

4. The literature was searched for suggestions as to desirable equipment.

In Chapter Two, the educational aim was stated and the program in first grade was described as follows:

The educational aim of a good school is to secure the wholesome growth of the whole child by the development of

- I. Attitudes, habits, and knowledge which result in a strong healthy body and skill and independence in the use of that body.
- II. Ability to think clearly about practical problems on his level of maturity; habits of observing keenly the world around him; and habits of enjoying experiences with art, music, poetry and other literature.
- III. Sound mental health and good work habits.
- IV. The social concepts, attitudes, and traits of a good citizen who has respect for others, independence, integrity, and the inclination and ability to cooperate with his fellows and to accept the responsibilities of group life.

In her efforts to bring about the wholesome growth of the whole child, it was found that the superior first grade teacher will provide for the child to have

- I. Meaningful experiences related to health, his daily living, and his outstanding interests.
- II. Opportunities to meet and solve problems at his level of maturity, using the information and skills he needs for the purpose, and then evaluating the results.

- III. Ample bodily activity and practice in good health habits.
- IV. Experience in working with a group and accepting small responsibilities within his ability to perform successfully.
- V. Opportunities for creative experiences in art, music, and language and for enjoyment of art, music, and poetry and other literature.

It was also found that the superior teacher sees each child as an individual and leads each one on the basis of her respect for his growing personality and her insight into his individual needs.

Equipment was observed in four outstanding schools, twenty-one interviews were secured with successful educators and experts on building and equipment, and many suggestions as to desirable equipment were found in the literature on the subject. Desirable equipment and its arrangement was suggested in Chapter Three. The equipment described included chairs and supplementary seating, tables, a balcony, a platform in front of the windows, an elevated floor, and cabinets for storage and display space; full-length mirrors, sinks or wash basins and drinking fountains; equipment for cooking and eating, for resting, and for exercise; equipment for painting, for clay modeling, for working with wood; equipment for dramatic play, for a room library and reading, for a science center, and for various other special interests.

Recommendations

As a result of this study the following recommendations in regard to desirable equipment and its arrangement seem justified:

- I. All heavy furniture should be fitted with gliders or rollers so that it will be movable. This includes movable storage cabinets.

- II. Adequate storage space should be furnished in built-in or movable cabinets along one or more walls.
- III. All shelves in cabinets should be made adjustable and removable so that they will be more flexible.
- IV. Display and writing boards should be supplied in sufficient quantity mounted either on cabinet doors or as swinging-type boards.
- V. Full-length mirrors are necessary and should be hung on cabinet doors or the sides of tall cabinets.
- VI. Chairs and tables should be of a type which may be nested to provide additional space.
- VII. Tables and the tops of low cabinets should be covered with linoleum or plastic to insure ample work space.
- VIII. Removable easels should be built to hang over cabinet doors and in this way supply ample space for painting.
- IX. Screens should be provided for use as bulletin boards or other display space or for constructing a playhouse or stage. They should either be built-in telescoping screens or be hinged or mounted on a standard.
- X. A sink or wash basin, adequate electrical outlets, hot plates, cooking utensils and dishes, together with work and storage space, should be furnished to make it possible for the teacher to encourage the eating of nutritious food.
- XI. Strong ropes or chains should be suspended from the ceiling so that swings, steel bars, large rings, rope ladders, and other equipment of the same type may be attached to them to provide for additional exercise.

XII. Mats of some material such as celotex or rubatex should be supplied to give children a chance to stretch out and really relax when they rest.

XIII. In addition, as many as possible of the following types of equipment should be adapted to local conditions:

1. A balcony over the back of the room to supply more space.
2. A glass partition to separate the work space from the main part of the room.
3. Either a platform under the windows or an elevated floor to raise children to a height from which they can see from the windows.
4. Low cabinets or open shelves to mark off alcoves.
5. A child's folding play-pen with wire netting fastened to the inside to be used for a pet pen.

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APPENDIXES

APPENDIX A

QUESTIONNAIRE SENT TO DETERMINE AVAILABLE SPACE

My dear Sir:

I am trying to gather data for a thesis on the subject, Desirable Equipment Related to Available Space in Typical First Grade Classrooms in North Carolina Schools. I must determine the average size of first grade rooms in North Carolina and the average enrollment in first grades of the state.

Will you please give me the following information concerning first grades in your school system?

Average length of first grade rooms	_____
Average width of first grade rooms	_____
Average height of first grade rooms	_____
Average enrollment of first grades	_____

If it is impossible to send this information, will you please give me the names and addresses of first grade teachers in your school system?

This information will be appreciated very much.

Yours truly,

APPENDIX B

INTERVIEWS WITH EDUCATORS AND EXPERTS ON BUILDING AND EQUIPMENT

PERSON INTERVIEWED	DATE
1. Dr. Franklin H. McNutt, Associate Dean of the Graduate School, Woman's College of the University of North Carolina, Greensboro, North Carolina	June 18, 1945 June 14, 1948 June 23, 1948 July 8, 1948
2. Miss Ruth Fitzgerald, Professor of Education, Woman's College of the University of North Carolina	July 11, 1945
3. Mr. W. F. Credle, Director of the North Carolina Division of Schoolhouse Planning and Mr. Ray L. Hamon, Director of the National Division of Schoolhouse Planning	August 9, 1946
4. Dr. Eugenia Hunter, Associate Professor of Education, Woman's College of the University of North Carolina	June 20, 1948 July 8, 1948
5. Miss Margaret Greene, Associate Professor of Physical Education, Woman's College of the University of North Carolina	July 6, 1948
6. Mr. Floyd Rollins, Dealer in Celotex	July 7, 1948
7. Miss Martha Zachman, Architect, Visiting Professor, Woman's College of the University of North Carolina	July 14, 1948
8. Dr. Theo Dalton, Assistant Professor of Education and Principal, Curry Training School, Woman's College of the University of North Carolina	July 14, 1948

PERSON INTERVIEWED

DATE

9. Miss Ruth Lee, First Grade Teacher, Curry
Training School, Woman's College of the
University of North Carolina July 14, 1948
10. Miss Donna Lee Loflin, Principal, Park
Street School, Asheboro, North Carolina . . . August 14, 1948
11. Miss Mary Batts, First Grade Teacher,
Erwin, North Carolina October 14, 1948
April 25, 1950
12. Miss Eleanor Kincanon, Second Grade Teacher,
Erwin, North Carolina October 18, 1948
13. Mr. John Burgess, Harnett County Carpenter . . April 22, 1949
14. Mrs. J. R. Auman, First Grade Teacher,
Lowes Grove School, Durham County,
North Carolina April 23, 1949
15. Miss Ethel Martus, Professor of Physical
Education, Woman's College of the
University of North Carolina June 23, 1949
16. Mr. C. D. Baggett, Seventh Grade Teacher,
Erwin, North Carolina May 16, 1950

APPENDIX C

EQUIPMENT CATALOGUES SURVEYED IN THIS STUDY

1. American Radiator and Standard Sanitary Corporation, Pittsburgh 30, Pennsylvania
2. American Reedcraft Corporation, 83 Beekman Street, New York 7, New York
3. American Seating Company, Grand Rapids, Michigan
4. Armstrong Cork Company, Floor Division, Lancaster, Pennsylvania
5. Arlington Seating Company, Arlington Heights, Illinois
6. Bobrick Manufacturing Corporation, 2619 Santa Fe Avenue, Los Angeles 11, California
7. The Block Shop, 58 Wall Street, New Haven 11, Connecticut
8. Charles Beseler Company, 243 East 23rd Street, New York 10, New York
9. Creative Playthings, 867 Madison Avenue, New York 21, New York
10. Educational Playthings: Division of American Crayon Company, Sandusky, Ohio
11. E. W. A. Rowles Company, Racine, Wisconsin
12. Flowers School Equipment Company, Richmond, Virginia
13. Gaylord Brothers, Incorporated, Syracuse, New York
14. John J. Nesbitt, Incorporated, Philadelphia, Pennsylvania
15. Judy Company, 107 Third Avenue North, Minneapolis 1, Minnesota
16. Milton Bradley Company of Georgia, Incorporated, Atlanta, Georgia
17. Modine Manufacturing Corporation, Racine, Wisconsin
18. National School Supply Company, Incorporated, Raleigh, North Carolina
19. North Branch Chair Company, North Adams, Massachusetts

20. North Carolina Furniture, Incorporated, Statesville, North Carolina
21. Peabody Seating Company, North Manchester, Indiana
22. Playskool Manufacturing Company, 200 Fifth Avenue, New York City
23. Potomac Engineering Corporation, 664 North Michigan Avenue, Chicago 11, Illinois
24. Radiant Manufacturing Corporation, Chicago, Illinois
25. Weber Costello Company, Chicago Heights, Illinois
26. Young America Films, Incorporated, New York 22, New York